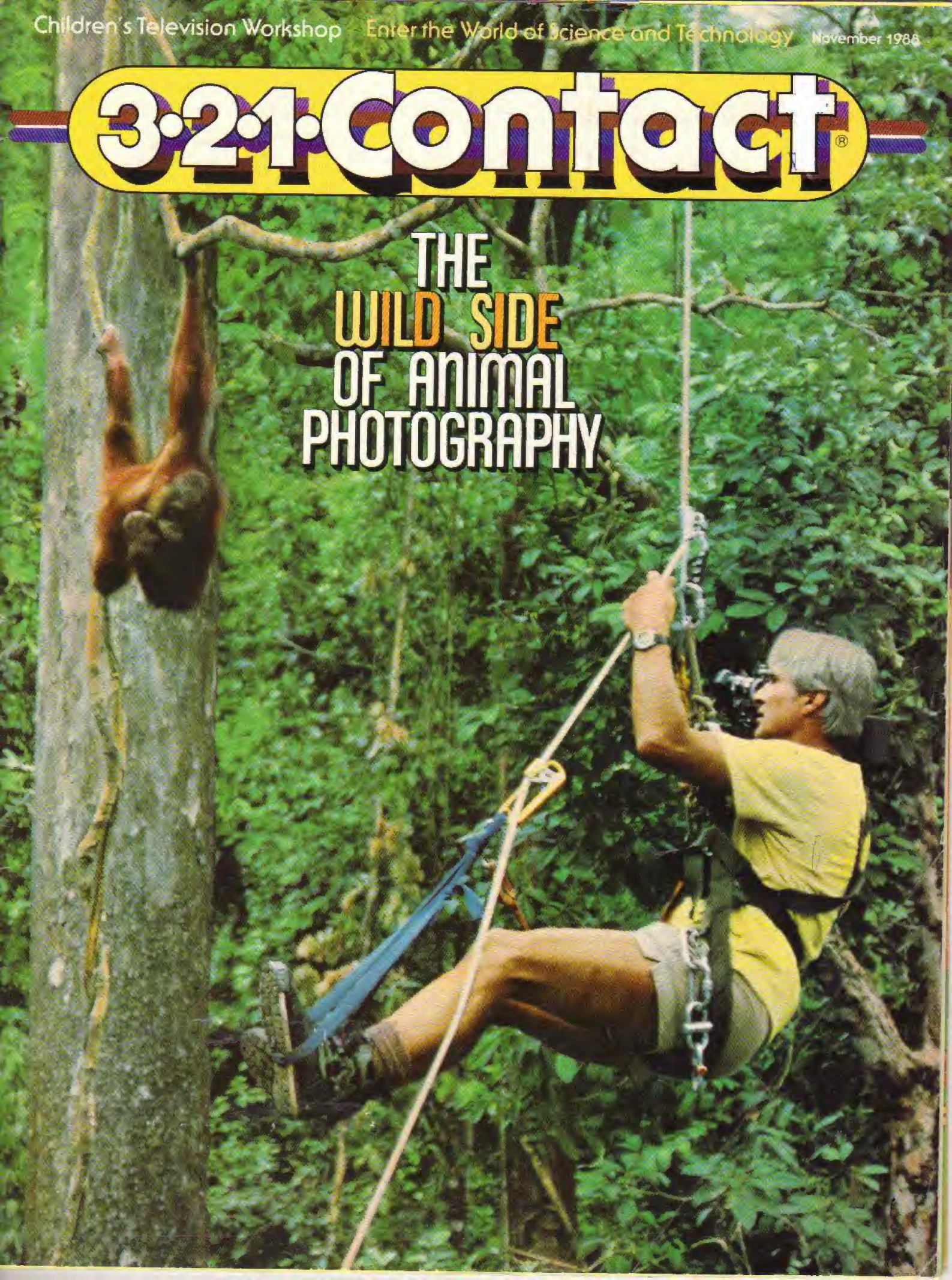


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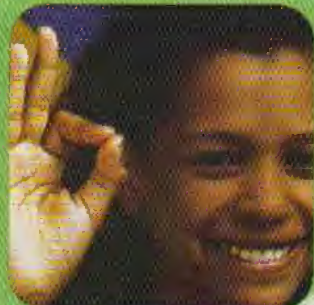


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Cover: Wildlife photographer Wolfgang Bayer dangles from ropes as he tries to get a close-up shot of a chimp. Photo Shane Moore © Wolfgang Bayer Productions



ILLUSTRATION BY MICHAEL DONATO

Leap Year

Herman Forest's pet frog died recently. That may not sound like big science news, but the frog was 23 years old. That's a new frog record.

Most frogs live to be about 5 or 10 years old. The previous record-holders were both 15 years old. If that doesn't sound old to you, think of it this way: a frog living to be 23 is the same as a human living to be 133!

Forest is a biologist from Rochester, New York. He studies creatures that live in lakes. According to Forest, his elderly pet survived many close scrapes. Chased away by cats, the frog even spent an entire winter in the lake, under ice.

Forest named the long-lasting leaper Methuselah. That's the Biblical character who lived to be 969 years old.

Pollution Patrol

Ray Proffitt has become a giraffe. No, not the kind of giraffe you see at the zoo. Ray was named

a "giraffe" by an organization that honors people who "stick their neck out for the common good."

Ray has been sticking his neck out by reporting people who pollute the Delaware River. Chugging along in a boat that looks like a car, Ray keeps track in his logbook of any pollution he sees. He also takes photographs.

Then he tracks down the people who dumped the mess. If the polluters won't clean up their act, Ray takes them to court.

"I've had some success," Ray proudly told CONTACT. Why does he do it? "I do it for the river."

Besides Ray, the Giraffe Project in Langley, WA, has named over 200 "giraffes." John Graham, one of the founders of the project, hopes the awards will encourage other people to stick their neck out.

Unfortunately, he says, most people want to play it safe. "They are ostriches, not giraffes."



ILLUSTRATION BY NED SIAM

Fast Car or Fast Food?

Look...Speeding down the highway...Is it a car? Is it a doughnut? Well, it looks like a car and it smells like a doughnut. But it's Louis Wichinsky in his pickup truck.

Louis has been an inventor since 1942. His latest creation is a truck that runs on vegetable oil.

For years, people have been inventing ways to make cars run on fuels other than gas. They've tried everything from coal to garbage. But few fuels have worked well enough to be sold to the public.

Louis hopes his souped-up invention will make a difference. His veggie-car has traveled as far as 100 miles. Soon he hopes to drive it across the U.S. How will he refuel? He'll stop at restaurants along the way. They'll supply him with plenty of oil. But hold the french fries!

PHOTO © THE CHRISTIAN SCIENCE MONITOR/NEAL MENSCHIL

Ho-hum, Yum-yum

What do you do if a lion yawns at you?

A) Sing it a lullabye and send it to bed.

B) Give the bored lion a game to play.

C) Run.

According to Ronald Baenninger, the correct answer is "C." People often yawn when bored or sleepy. But Baenninger thinks that lions yawn only right before a meal.

Baenninger studies yawning at Temple University in Philadelphia, PA. In addition to lions, Baenninger has also studied the yawning habits of Siamese fighting fish, baboons, and humans.

For his next project, he hopes to answer one of the most puzzling questions about human yawns: Why do people yawn when they see other people yawn?

While you're thinking about that question, you may find yourself starting to...yawwwwnnnnn! It seems that even reading about a yawn can get people opening wide and breathing deeper.



PHOTO BY MICHAEL DICKMAN/ALAMY

ILLUSTRATION BY JO LYNN ALCOHN



Keeping Cool

Stick a chocolate bar in your pocket on a hot day. Wait one hour.

That used to be a sure-fire recipe for an ooey-gooey mess. But thanks to Claude Giddey, an inventor, future chocolate bars may stay solid longer.

Diggey's invention works by adding a tiny amount of water to the chocolate. The water raises the chocolate's melting point—the temperature at which a solid turns liquid.

Ordinary chocolate melts at 80°F. Giddey's chocolate—which won't be in the stores for a few years—stays firm even at 105°F.

Does Giddey's invention taste as good as regular chocolate? A spokesperson for Giddey's company claims that "the average person can't tell the difference."

Food for Thought

Now that you've just read about chocolate, how do you feel? Psychologists say that if you like

chocolate, you should be feeling very relaxed.

Scientists already knew that the smell of food can make people feel good. But researchers at Yale University recently found that even the thought of food helps people calm down.

So the next time you're nervous about something—like a test or a visit to the dentist—you may be able to help yourself relax. Just picture a huge chocolate sundae or crispy pizza pie—whatever your favorite food may be. Then sit back and relax. Mmmmmm...

So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science story from the news that you think our readers would like to know about. (Be sure to tell us your T-shirt size and where you heard the story.) Send to:

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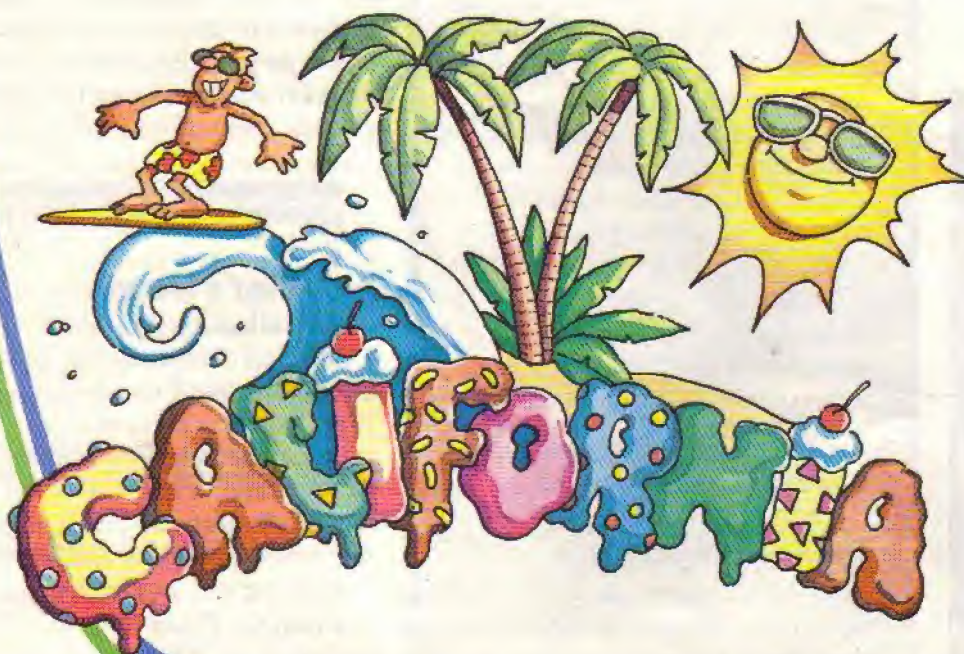
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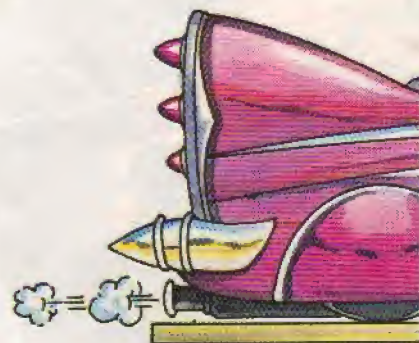
The longest game of Monopoly ever played lasted 1,416 hours. That's 59 days.



Your fingernails grow about $\frac{1}{25}$ of an inch a week.



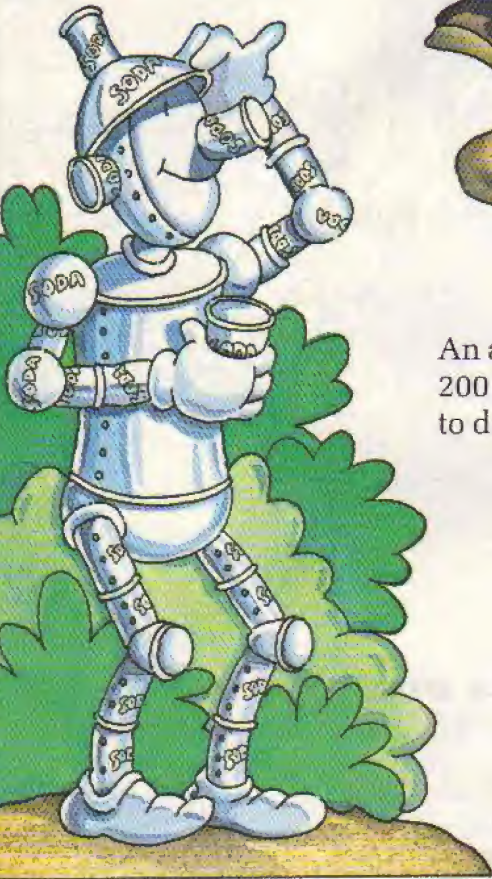
California produces more ice cream than any other state.



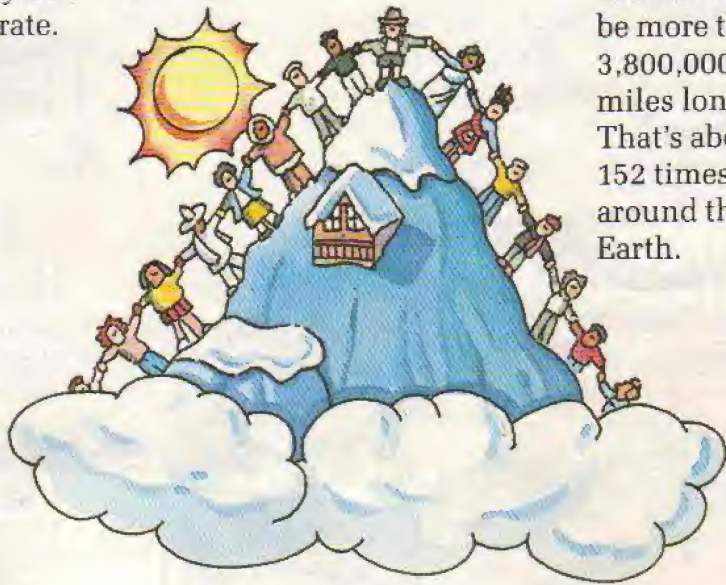
Scientists discover
5,000 new plants
every year.



An aluminum can takes
200 to 500 years
to disintegrate.



If everyone
in the world
joined hands,
the line would
be more than
3,800,000
miles long.
That's about
152 times
around the
Earth.



In the U.S.,
more women are
millionaires
than men.



Any Questions?

by Michele Lyons

Do animals see in color? Some do and some don't. It all depends on what the animal must see to survive in the wild.

Most insects, birds, fish—and even monkeys—do see colors. Insects need to see colors so they can identify the patterns of different flowers they use for food. In fact, some insects can even see colors that we can't see. Birds, fish, and monkeys need to see colors for another reason. They often need to blend into their surroundings. Because they can see color, they know where to hide from enemies.

Many mammals—like dogs, cats, and horses—can see only in black and white and shades of gray. In their natural environments, most of these animals hunt for food at night. In the dim light, they need to see different shapes. But they don't really need to see colors. So, their eyes developed without color detectors.

Question sent in by Julie Holzinger, Stone City, IA.



How are erasers made? Now you see it, now you don't—thanks to erasers! These cleaners are made from two main types of ingredients—powder and rubber.

In the factory, the powders and rubber are mixed together into a globby goo. Then the eraser goo is baked at very high temperatures. The heat turns the gooey mass into a firm solid. The solid eraser can then be cut into any shape.

The powders in erasers are unusual. One powder called pumice (PUM-is) is finely ground volcanic rock. It makes the eraser rough so it cuts the paper fibers and helps remove what you write.

Another powder is factice (FAC-tis). It comes from vegetable oils. Factice helps the eraser crumble into eraser dust. Without it, the mark you want to erase would just smear.

The rubber part of the eraser cushions all that rough scraping. That way, you don't erase a hole through the paper. You can pick up your pencil and start all over again.

Question sent in by Jennifer Miller, Murphysboro, IL.



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AT CLOSE RANGE

DARING PHOTOGRAPHERS CAPTURE WILDLIFE ON FILM

by Deborah Heiligman



Photographer Bob Armstrong gets a bird's-eye view of this black currawong in Tasmania, Australia.

You turn on the TV and you see a picture of: A shark swimming in the ocean depths...A lion stalking its prey...A baby bird hatching from an egg...A wolf howling at the moon.

What you *don't* see is the person swimming right next to the shark. Or the person running through the jungle with the lion, or high up in a tree for hours or days, waiting for the egg to hatch.

Who is that behind-the-scenes man or woman? It's someone who makes a living taking pictures of wild animals!

Wildlife filmmakers and photographers sometimes risk their lives for their job. But if it weren't for these men and women who spend years traveling the globe to get the perfect picture, we wouldn't get to know dangerous and exotic animals up close.

Danger in the Field

"You have to be careful when filming animals. You have to know what you're doing," Marty Stouffer told CONTACT. Stouffer is a wildlife filmmaker and the producer of a TV series called *Wild America*.

"But it doesn't take a scientist to know if an animal is happy and friendly—or if he's ready to

attack," Stouffer explained. "If a dog is wagging his tail, and his ears are up, he's happy. It's the same with a wolf or a bear or a deer. If his ears are layed back and his fangs are showing, watch out. You better keep your distance."

Sometimes wildlife photographers are killed or hurt in the line of duty. Last year two photographers were killed by grizzly bears. They had gotten too close to the animals.

That's one of the hardest—and the most dangerous—parts of the job for wildlife filmmakers. How do you get the best shot without putting yourself in danger—or scaring away the animals?

Stouffer has shot films from a raft going down a choppy river. "It's not the sturdiest or steadiest platform," he says.

Michael Male, who makes films about birds, builds bird blinds—little houses that people can see out of but birds can't see into. He once had to sit in a very shaky bird blind 40 feet in the air. "When the wind blew," says Male, "it was pretty scary."

Alan Deegan, another filmmaker, actually had to swim right next to some pretty mean alligators to get close-up shots. His assistant kept throwing

chicken meat to the alligators to keep them happy—and full.

Much of the danger, however, doesn't come from the animals. It comes from natural hazards such as avalanches, ice, fire, and water. Filmmaker Deane Rink had waited for years for a chance to go to Antarctica to do a nature film. (Antarctica is filled with penguins and seals.) No sooner did he get there than he got a hangnail on his foot.

Usually a hangnail is no big deal. But it could get infected. In Antarctica, that could be a serious problem since visitors to that cold continent must be in tip-top shape. There aren't any hospitals. And you have to keep up with your team of explorers. So Deane Rink had to be sent home.

Another filmmaker had trouble with lava. He was walking on a river of crusted lava to film animals and birds escaping a burning forest. While taking pictures, he fell through the lava!



Fortunately, the lava had cooled off, so he didn't get burned. But his leg got cut up badly, and he needed many stitches.

Marty Stouffer says he has had the most trouble with water. For his first film, Stouffer went to Alaska. He wanted to film huge Stellar sea lions, which are as big as cars.

Stouffer went with a fisherman to Cape Chiniak, where the sea lions are carried by the tide up onto some rocks. They bask in the sun until



PHOTO © MOI FRANK BAYER PRODUCTIONS

PHOTO © STOUTER PRODUCTIONS LTD./ANIMALS

Above: Sometimes wildlife photographers are sticklers for getting the right picture. Here, Wolfgang Bayer climbs a prickly cactus to film an owl.

Left: Marty Stouffer waited patiently to get this shot of baby skunks—but he better watch out for Mama!

the tide carries them out again. Stouffer rowed a rowboat to the rocks to get his shots.

"I was so busy taking pictures, I wasn't paying attention to the time or what the water was doing," Stouffer told CONTACT. "The next thing I knew my rowboat had floated away and I was stranded. The water was getting higher and higher all the time. I knew that in five or six hours the rocks would be covered with water—and so would I." ➡

Stouffer fired some SOS shots with his rifle, but the fisherman had fallen asleep and didn't hear them. "I waited for five hours, and then, with the water lapping at my feet, I heard a helicopter overhead. Someone had heard those shots but it took them a long time to find me in the Alaskan frontier!"

Stouffer learned a valuable lesson from that adventure, one that all wildlife filmmakers have to learn: You have to know more than how to take pictures. You have to be prepared for all emergencies. You have to know how to survive in the wilderness.

It's Hard Work

For most filmmakers, however, patience is the key to getting the best shots. For Judy Fieth and her husband Michael Male, making films about birds is not really dangerous. "The worst thing is the bugs," Fieth told CONTACT. "I hate them! Swarms of flies and mosquitoes and green-headed flies all around us!"

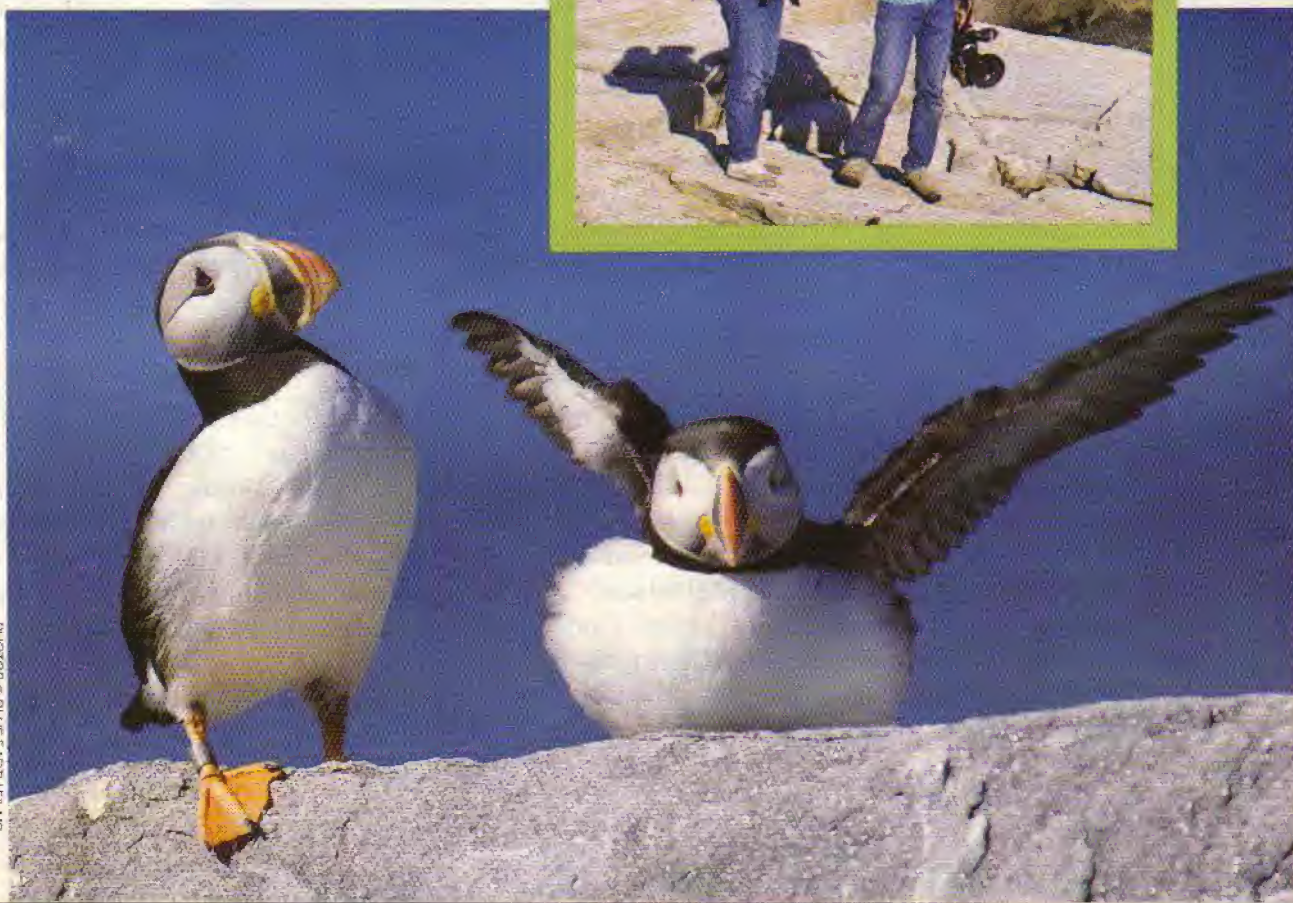
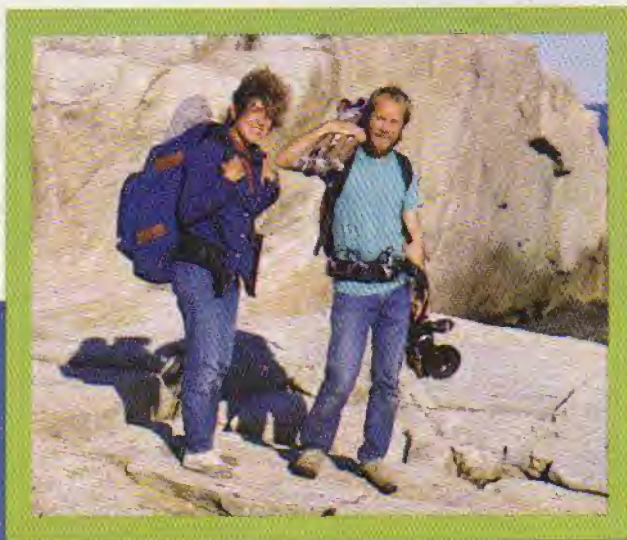
But Fieth often has to put up with bugs during the long hours she spends in the woods. For her, filmmaking can be tiring work. *Return of the Osprey*, their first film, is one hour long. It took six years to make.

Why can it take so long to make a movie about animals? For one thing, the sun has to be just

right when you're filming. It's best if it's low in the sky. If it's high, everything is lit from the top and looks flat. And then, even if the sun is good, the animals don't cooperate. It may take a long time to get the picture the photographers are looking for.

Fieth explains: "Suppose we want to get a shot of a mother bird feeding a baby bird. We find a nest that has baby birds in it. But the father bird isn't having any luck finding the worms or the bugs or the fish. We have to wait and wait and wait. Finally he comes back and the mother feeds the baby, but the sun isn't right anymore!" It may take three days—or three years—to film that scene.

Filmmakers can spend not only a lot of time, but also a lot of money to get the perfect shot. Hugh Miles had to get some pictures of polar bear cubs. Scientists told him that he would certainly find plenty of polar bear cubs during March and April—if he flew to an island in Norway, only 750 miles from the North Pole.



PHOTOS © BLUE EARTH FILMS

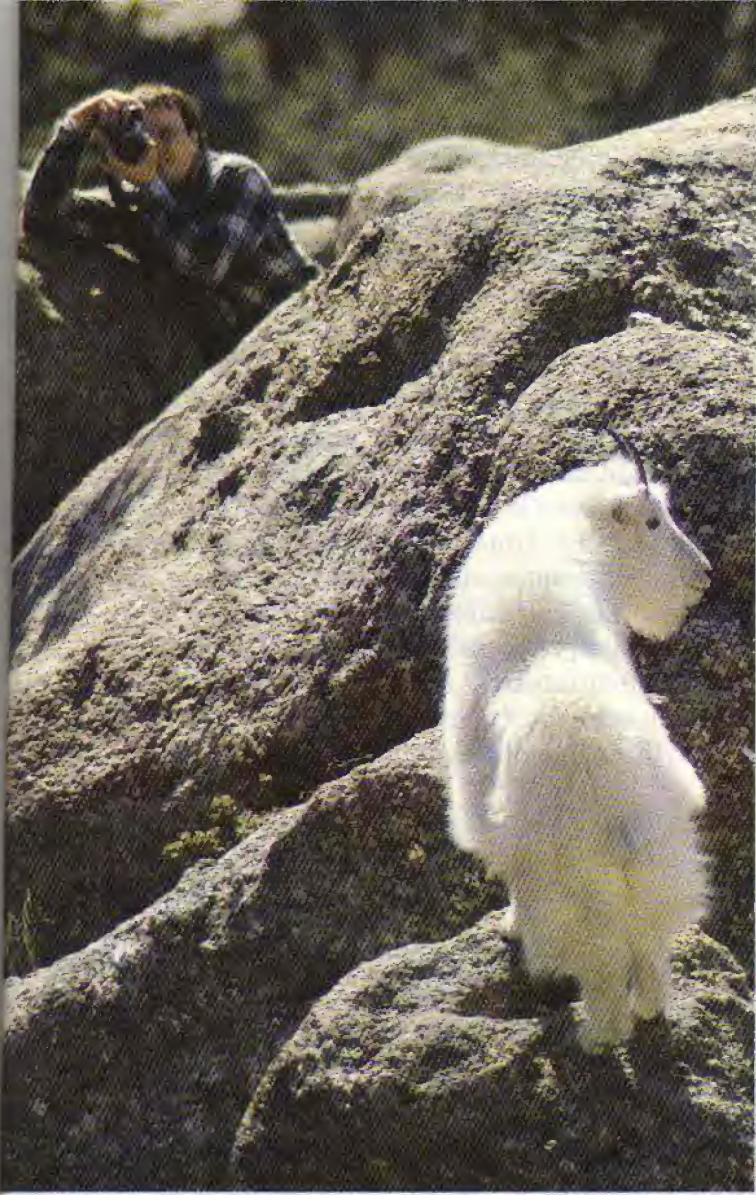


PHOTO © CHARLES PALEK/ANIMALS ANIMALS


It cost a lot of money to get there with his equipment and crew, but Miles went. For four weeks Miles didn't see any polar bear cubs at all. Finally, just when he was about to give up, he found a den with a mother bear and her new-born cubs in it. He filmed the mother leading her cubs out of the den for the first time. It was worth the wait and money to get that shot.

For the Love of Animals

If it is such hard—and sometimes boring or dangerous—work, why do filmmakers do it?

"Michael and I both love filmmaking, but our first love is wildlife," Judy Fieth told CONTACT. They're not alone. Most wildlife filmmakers started out as scientists, or at least with a love of science and animals. What they all have in common is patience and a good eye. In fact, filmmakers have such good eyes that they often discover new things about animals before scientists do! Filmmakers learn a lot about an animal's eating and mating habits, for example.

"If I weren't a filmmaker, I would be working in a zoo or as a forest ranger," Marty Stouffer said. "I am also fascinated by the magic of photography. I can't believe that one minute the animal is in the wild and the next minute I've captured him on film."

Filmmakers like Marty Stouffer are risking their lives to bring the wonders of nature into our homes. Thanks to them, we're getting a safe, close-up view. 

Above: A Mount Rushmore Rocky Mountain goat led Ed Hoffman into this tight spot.

Left: Filmmakers Michael Male and Judy Fieth (small photo) travelled to islands off the coast of Maine to make their film, "Puffinwatch."

Right: To get a close-up shot, Adrienne Gibson had to get eye-to-eye with this Australian wallaroo. Wallaroos are members of the kangaroo family.



PHOTO © MICKEY GIBSON/ANIMALS ANIMALS

Every Body's Talking

SCIENTISTS EXPLORE BODY LANGUAGE

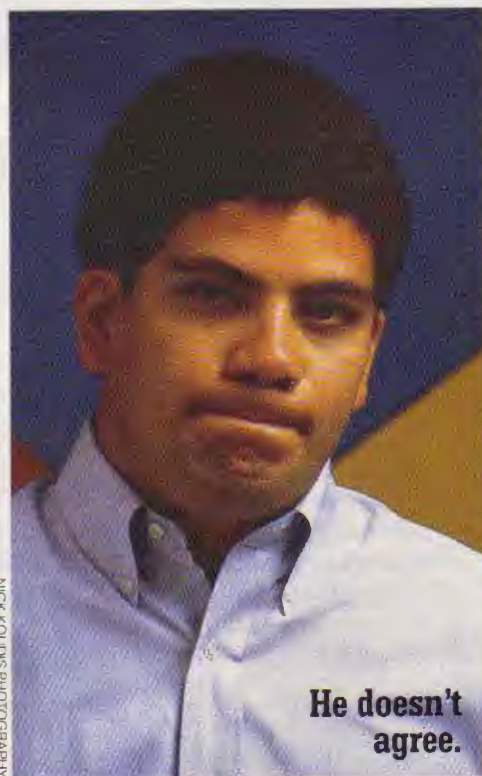
by Michele Lyons

You can say it all without even saying a word. How? Let your body do the talking. Use body language!

When somebody "speaks" with their body, they are using movements instead of words to communicate. These body movements are called gestures. Each gesture has a certain meaning. When you wrinkle your nose, for example, you're probably saying, "Yuck! That's gross!"

Everybody uses movements and gestures all the time. In fact, most people use body language without even thinking about it. That means it's hard to fake. Your body may communicate how you feel about something, even if your words say something different.

Many scientists think the idea that body movements form a special language is silly. They argue that people aren't really "saying" anything by holding their arms or legs a cer-



NICK KOLDS PHOTOGRAPHY

tain way.

But many researchers disagree. They believe that people send out definite messages with their bodies. In fact, body language experts say you can read a person like a book—if you know what to look for!

Body Talk

For starters, these researchers point to feet. They say people who stand with their toes pointing inward may not feel sure of themselves or in control of a situation. People who feel in control, point their toes outward.

Arms tell another story. Do you ever lean back in a chair with both hands behind your head? That's a body language message that might say: "I am the boss here. This is my space." Arms that are crossed or folded may say: "I am not very sure of myself. Come no closer!"

People can say a lot with their faces, too. Raised eyebrows may mean, "I don't believe you." So might eyes that are narrowed and half-closed. Some scientists insist that the pupils of the eyes get bigger when a person is pleased. If the pupils are smaller than usual, it may mean a person isn't happy about something.

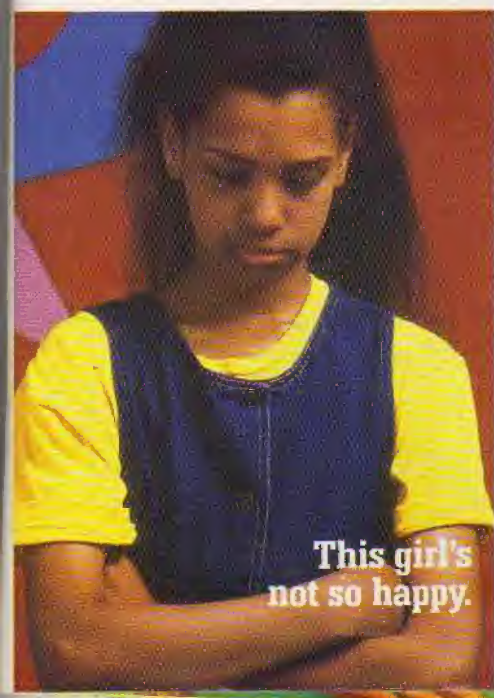
Police detectives and some scientists study body language to spot liars. They say beware of people who rub their eyes or touch their noses when they speak. They may be fibbing. So could someone who covers their mouth when they talk. A yawn might be a sign of uneasiness or boredom. And tightly pursed lips may signal disagreement. Lawyers often watch for these signs to know what a judge or jury is thinking.

Making the Right Moves

Since everyone uses movements and ➔



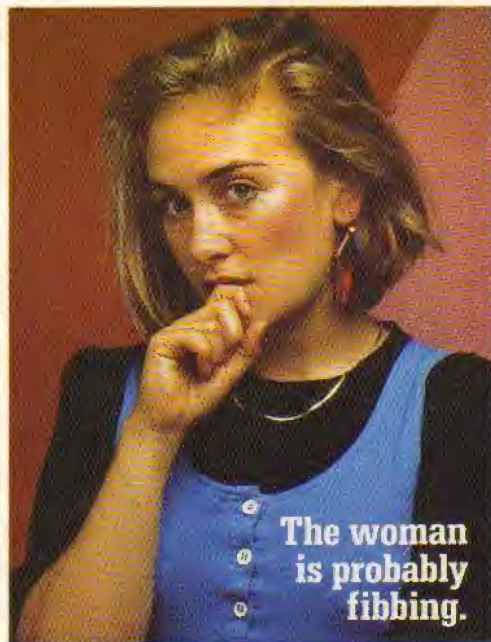
He's bored.



This girl's not so happy.



This man is in control.



The woman is probably fibbing.



He's giving up.

gestures, how do we know all the right moves? Are we born knowing them or do we learn them as we grow? "The answer is both," says Dr. David Givens, a scientist who studies body language.

Certain gestures are with us from the time we are babies. Smiling and crying are good examples. This type of body language is the same all over the world. A shoulder shrug together with open hands means, "I give up."

The "eyebrow flash" is another worldwide gesture. "Almost everyone raises their eyebrows when they meet someone familiar," Dr. Givens told CONTACT. It's a way of saying, "hello."

Another type of body language is learned over the years by watching the people around us. "People don't teach you the movements. You just pick them up the way you learn spoken language," explained Dr. Paul Ekman, a professor of

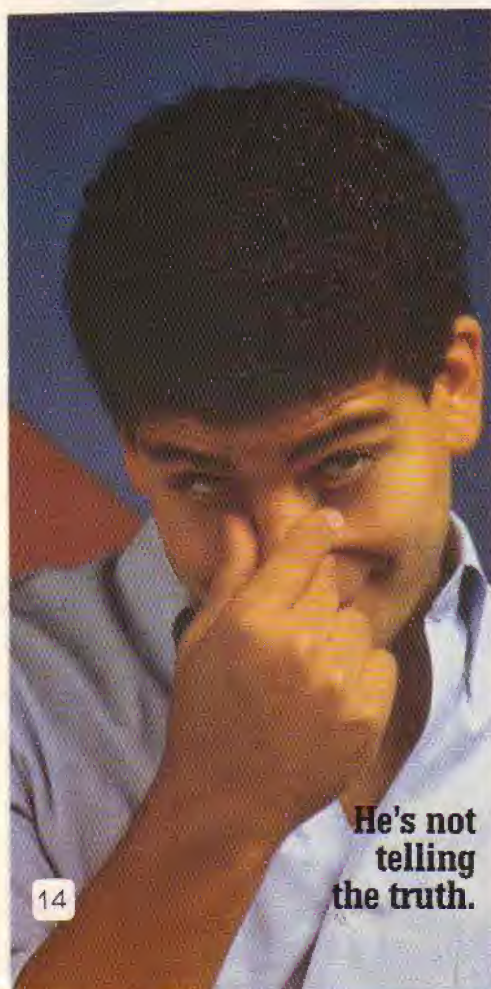
psychology at the University of California in San Francisco.

Learned gestures will not be the same from place to place. That means you can get into big trouble when you travel.

In most places, "No" is shown by shaking the head from side to side. But in Sri Lanka, these movements mean the opposite. In this island-nation in Asia, making a circle with the thumb and forefinger means everything is fine. Use that gesture in France and you're saying that somebody is worth nothing.

Talk with the Animals

According to most scientists, even members of the animal world use body language. "When dogs are scared, their hair bristles to make their bodies look larger," explained Dr. Givens. To



He's not
telling
the truth.



A-Okay!




This girl
is sure
of herself.



Don't mess
with this boy!

look bigger, "scaredy" cats show the side of their bodies to enemies. Humans do something similar. "We put our hands on our hips," Dr. Givens continued.

That's an important gesture to know if you catch a chimpanzee showing you its teeth. When chimps do this, they may look as if they are smiling. But it means they are angry and about to attack. (Putting your hands on your hips may not stop a chimp. So the best gesture for a human to learn is running away!)

Body language may be more powerful than people ever thought. New research shows that body language can affect how we feel, too. "You can become what you put on your face," said Dr. Ekman. In other words, if you frown, you'll feel sad, too. So, what better reason is there to put on a happy face and keep smiling? 

A Wave Is a Wave Is a Wave. Isn't It?

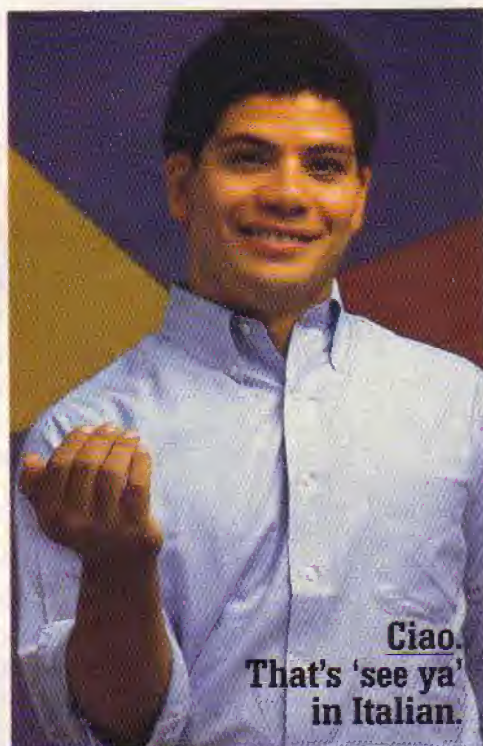
The simple gesture of waving goodbye is different in many places. In Italy, the palm of the hand is held toward the speaker and the fingers move to "call" the other person back.

In France, the hand moves as if to push the leaving person away.

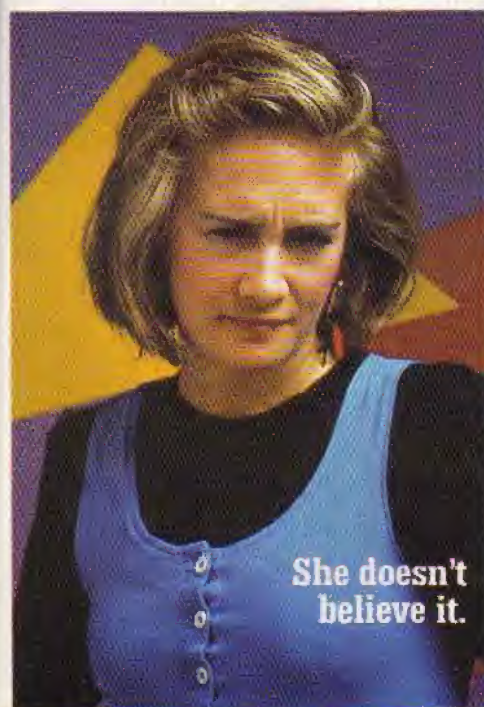
Americans may move a flat hand, palm outward, left and right. "But don't do that in certain parts of the Middle East," Dr. Givens, a scientist who is studying body language, told CONTACT. "That type of wave is a nasty gesture over there!"



This girl
is kind of
nervous.



Ciao.
That's 'see ya'
in Italian.



She doesn't
believe it.

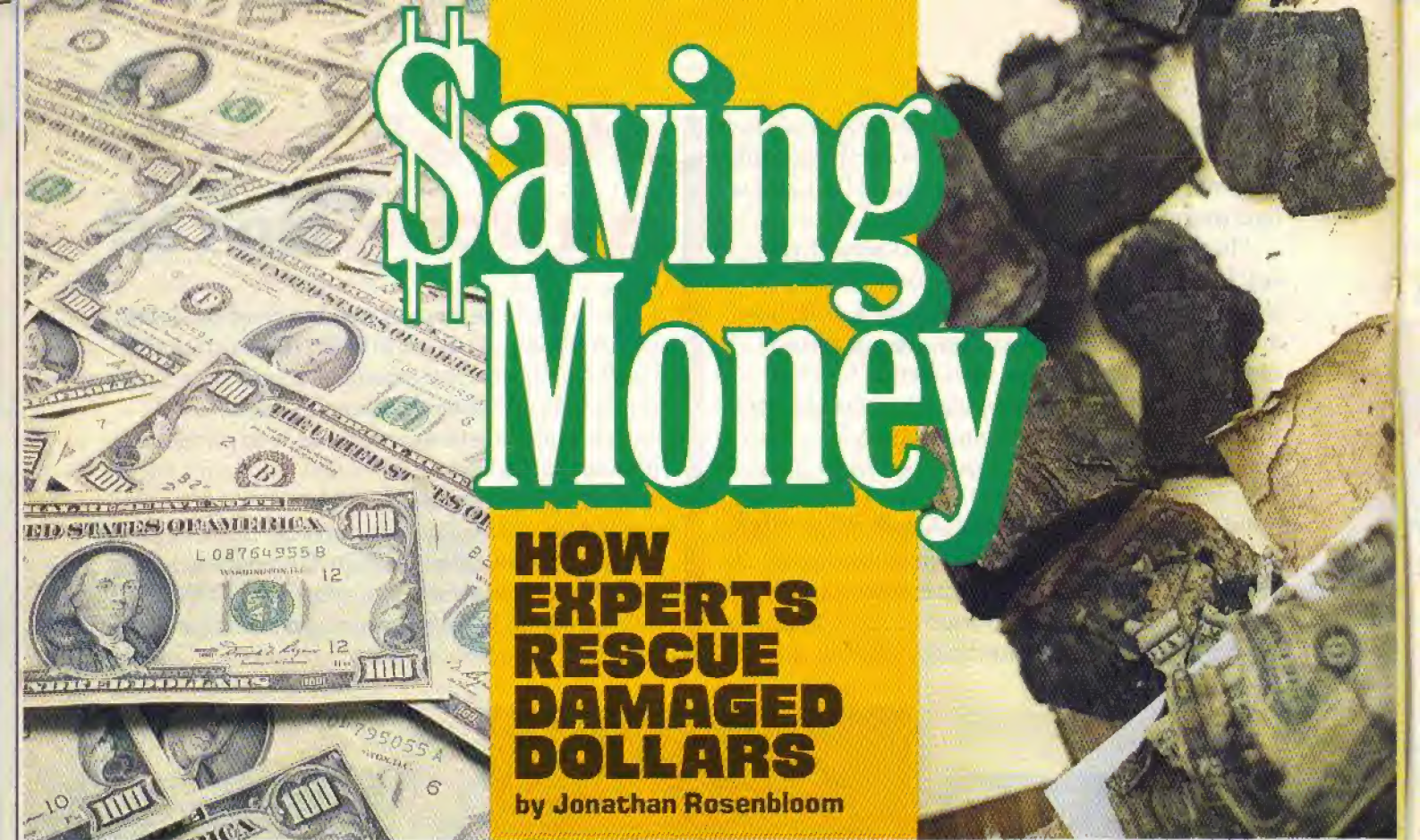


She's sort of
telling
the truth.



See ya'.
That's goodbye
in the U.S.

NICK KOUJOS PHOTOGRAPHY



Saving Money

HOW EXPERTS RESCUE DAMAGED DOLLARS

by Jonathan Rosenbloom

There are lots of interesting jobs in the world—from growing mushrooms in cool, dark caves, to painting huge bridges, to studying sharks up close beneath the sea.

But one of the most unusual jobs takes place in a room of a building in Washington, DC. That's where an agency of the U.S. government—the Division of Mutilated Currency—is located.

Workers in the Division piece together paper currency that has been practically destroyed. Any individual or bank can send in paper money that has been rotted by mildew, rain or mud, eaten by bugs, or burned by fire. To the average person, the bills aren't even recognizable.

Some of them are burned to a crisp. Others are so worn that the once-green money has faded to white. Other bills are mostly eaten away, thanks to bugs that munch on currency.

But bit by bit, piece by piece, the men and women of the Mutilated Currency Division try to put the bills back together. If they succeed, the U.S. government will send a check to the owner of the mutilated money in the amount that was repaired. (Last year the Division returned \$30

million to people.)

"It's like putting together a jigsaw puzzle," Lorraine Robinson told CONTACT. She is in charge of the group of examiners who spend their days hunched over tables filled with pieces of paper that once were money but now seem more like confetti or piles of ashes.

Each year, the Division's 23-member team handles some 35,000 cases. Anyone can send in paper money that has been destroyed. If the examiners can restore 51 percent of the bill, the government will send a check to the owner. (As long as you have 51 percent of a bill, it is legal currency.)

Buried in the Backyard

How does currency become mutilated so that it is unuseable? Lorraine Robinson explains: "There are many people who keep their savings at home rather than in a bank. So they bury their money in their backyard, or behind a brick in a wall.

"The money gets full of mildew. Or mud makes piles of bills stick together so they are difficult for people to separate. Termites munch on the special cotton and linen paper that

Left: A pile of badly burned money waits for experts to separate it. They must figure out just how much money there is.

Right: Careful records are kept of all money received. The owners claimed that there was \$460 in this pile of mutilated bills.

Below: Grover Smith Jr. uses a plastic bag to keep pieces of buried money. Mr. Smith uses tape to try to put the pieces together.

PHOTOS BY PETER J. GRIDLEY/EPG INTERNATIONAL



money is printed on. And much of the money is burned in fires."

Besides these "ordinary" reasons for ruined money, the Division has had extraordinary ones.

"Once a cow ate a farmer's wallet," Paul Frey, the chief of the Division, told CONTACT. "Then there was the case of an armored truck that sank in a swamp in Florida's Everglades. The company that owned the truck sent a case of money to us. Did it ever smell!"

Once in a while, bills come in that were found on the body of a dead person. "Then we use rubber gloves, masks and disinfectants while working on the money. The smell is something you can't imagine," says Thelia Antoniadis, an examiner with the department.

When someone sends in their money hoping to have it replaced, it is photographed and signed in by two people. "This is for accurate records," says Paul Frey. Then it is stored in a room-sized vault. "We keep case files for 10 years," notes Lorraine Robinson. "If there is any problem, we will have records to show what we did."

When an examiner is ready for a batch of money to work on, he or she will use detective work, various tools, and expert knowledge to figure out the worth of the bills. ➡

"Because the work is so hard, and takes so much concentration, we shift back and forth from an easy case to a harder one. Your eyes get tired and your back begins to ache," says Paul Frey.

Detectives at Work

Thelia Antoniadis is sitting at her desk. Before her are the tools of her trade: letter openers, hat pins, needles, rubber gloves, masks and bottles of disinfectant. She is using a letter opener to pry apart a half-inch thick wad of bills. The bills are covered in mud and are partially worn away. Thelia says, "You wouldn't believe where people keep their money. I think some of them keep it in pigsties."

Thelia is using a special ruler to see if 51 percent of a mud-covered bill is left. If there is, it goes into one pile. The final amount in the pile will be refunded to the owner.

"We never return the original money," Thelia explains, "unless someone wants 49 percent of a bill as a souvenir."

After a while, Thelia puts the muddy job aside and turns to a pile of burned money. Piles of fire-scarred brown and black paper fill a plastic bag. To an untrained person, it seems impossible to ever put the currency back together.

Thelia says as she works: "To figure out how much money is there, we have to piece together borders and serial numbers and the pictures on each banknote."



Above: Lorraine Robinson wears a mask, apron and gloves to handle money that may contain germs.

Below left: These hundred-dollar bills were buried in someone's yard. Now they have to be carefully pulled apart—and pieced back together.



Training for the Job

Thelia and the other examiners are experts on the job. Each new person receives six years of training, learning from people who have been with the Division for many years.

The examiners must learn the design of each paper bill, and the scroll work—the designs around the numbers on the bills. They have to learn how to use their tools to pull money apart. And they have to know when to boil it to get the mud off, and still not destroy the currency.

"This comes after years of practice," Lorraine Robinson notes. "We can just feel the money and decide whether we should boil it or pry it apart."

"Fires account for a lot of our cases," says Lorraine. "We can tell from the burn marks how hot the fire was. And speaking of hot, here's a tip: If

your money gets wet, don't try to dry it out in a microwave. It will disintegrate in seconds."

Is the hard work worth the effort? "You bet!" Ms. Robinson says. "It's a wonderful feeling knowing you've helped someone. For instance, we got a letter from a woman whose husband had died. Just before he died, he told her that he had buried a lot of money in a wall of their home. When she dug the money out, it was practically destroyed from mildew and bugs.

"We pieced it together, and discovered she had \$103,000. Knowing that we helped make her life easier is the greatest feeling in the world."

As for doing jigsaw puzzles when she's not on the job, Lorraine laughs and points to the room with the examiners huddled over their work. "No thanks. I have enough puzzles right here."

Right: What's cookin'? Lorraine Robinson prepares to boil some money in order to soften it. The bills are put in blotter paper so they don't fall apart.

Below: Thelia Antoniadis uses scissors and a letter opener to help her pry apart money. She pastes the pieces on a piece of white paper—the exact size of a bill.



Does Your Money Need Mending?

If you know anyone who has paper money that has been badly destroyed, they may be able to get their money back. Here's how:

- Send the money in its original container. Try not to disturb it.
- Send a letter explaining how the money was mutilated. Clearly write the name and address of the person who is to receive a check for the destroyed money.
- If the examiners can piece together 51 percent of a bill, they will refund the money.
- Send the currency by registered or certified mail to:

Department of the Treasury
Bureau of Engraving and Printing
OCS/BEPA, Room 344
P.O. Box 37048
Washington, DC 20013

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BRAINTEASERS

How many different kinds
of trees can you find
hidden in the leaf?

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N A E P L E
O R I K

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her name in future issues of the magazine
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5

G

BATTY WORDS

I

Fun Places to Eat Sunkist® Fun Fruits® Fruit Snacks

- While you read a letter from your pen pal
- At dusk, when you're looking for the first star to shine
- While you wait for the bathtub to fill up with water
- After a game of touch football

All the words in this word hunt are on your head. After finding all ten words, the letters you'll have left spell something your head couldn't make a move without.

C
H
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LETTERMANIA

The letters in the Tickle Tree are all mixed up. Can you put them in the right order?
Hint: Thanksgiving wouldn't be the same without them.

FACTOSAURUS

Dinosaurs lived from 65 million to 225 million years ago...or a total of 180 million years. Humans have only been on the Earth for about 10 million years. Humans' existence compared to the dinosaurs' is just a wink of the eye.

Rocket Riddles

What time is it when the clock strikes thirteen?

Keith Jackson, Clinton, IA

ANSWERS:
Said the Owl's Brain teasers: MAPLE, OAK, ELM, PINE, APPLE, PEAR.
Rocket Riddles: Time to reach for a Fun Fruit and get the clock fixed!
Lettermania: PILGRIMS
Batty Words: (Across) CHEEK, FACE, NOSE, MOUTH, BROW (Up-and-down) CHIN, EAR, EYE, LIP, JAW Letters left: HECK

HOUSE OF THE FUTURE

By Eric Weiner

This is a *made-up* story. But the machines described here could be built today!

If you ever met my father, you'd probably say he was quiet, serious, and polite. You would be right. Except for one week last September. By the end of that week he was screaming at all of us. He ended up climbing a tree in a rainstorm and falling and breaking his leg.

The trouble all started when Mom won first prize in our fire department's annual raffle. First prize was three free weeks in the Paradise House of the Future. That's a house with all these modern machines to make life easier. It had just been finished the month before. I guess the company that built it wanted a family to try it out.

The House of the Future sits on a hill about 30 minutes outside of town. The house is all white, made out of a kind of foam that dries rock-hard. It looks sort of like a giant marshmallow with windows.

If you think that's "rad," listen to this: The mailbox is all the way at the bottom of the hill. But it's attached to the house by a long conveyor belt that runs through the trees. Anytime the mail carrier puts mail in the mailbox, it automatically sends it up to the house.

The house was designed by Orville Reesbacher. On our first day, he drove over in his rusty red pickup to show us around. Without him, we wouldn't have even been able to get in. That's because the front door has no doorknob, no doorbell, and no lock where you can put a key.

"The computer will learn your voices," Mr. Reesbacher told us proudly. "That's for security. Just

talk into the speaker and introduce yourselves."

"I feel a little funny talking to a door," Dad said. But then he turned to the door and said, "Hello, this is Wallace Sweeney."

After a moment, the speaker crackled and a human-sounding voice said: "Welcome...to...your...new...home."

We all screamed! Then Mom introduced herself, followed by me, my brother PJ, and my sister Andrea. When we were done, the door swung open, all by itself.

At first glance, the inside of the Future House doesn't look all that strange. Everything is new and shiny, though. And not only that, the House of the Future cleans itself!

For instance, the kitchen table has a conveyor belt. When you're done eating, you press a button and the plates go straight into the dishwasher.

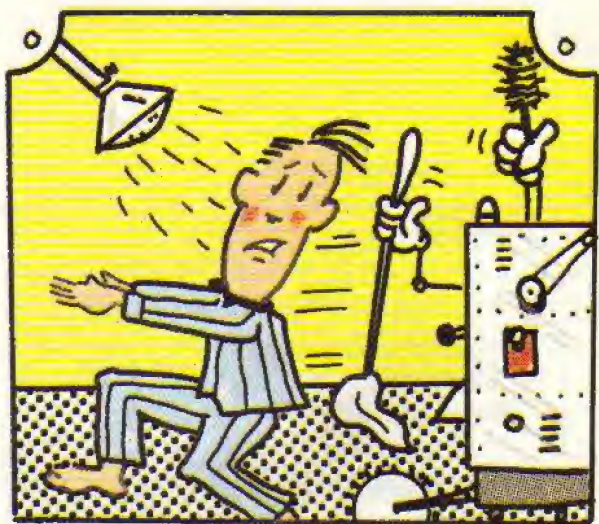
The central computer is in the kitchen. It runs all the machines, including the front and back doors. If a burglar climbed on our hill, Mr. Reesbacher said the computer would warn us. It would show the burglar on the huge TV screen in the kitchen. It would turn spotlights on the person and set off sirens.

That made me happy. I'm terrified of burglars.

The computer has a keyboard. Mr. Reesbacher showed us how to enter our schedules. He said the computer would give us helpful reminders throughout the day.

"Just what you need, right, PJ?" said Dad, poking him in the ribs. PJ is 10, two years younger than I am. He's known in our house as "Mr. I Forgot." He forgets to set his alarm clock. He forgets to bring his homework to school. He forgets everything.





PJ wasn't the only one who forgot about the computer's helpful reminders, though. Our first night in the house we were all watching TV. Suddenly we heard this loud weird voice. I jumped to my feet yelling that someone had broken in.

"Andrea," repeated the voice, "bed...time."

When we realized it was the computer, everyone laughed except me and Andrea.

That night, our troubles really began. See, with all that machinery, the Future House makes a lot of strange sounds. You hear ringing sounds, clicking sounds, whirring sounds, grinding sounds, and sighing sounds. Even though we knew we had a fancy security system, we all had trouble sleeping.

At around two in the morning, Mom got up to make herself a glass of warm milk. But the conveyor belt went off. It zipped her milk into the dishwasher before she could drink it.

She tried to go back to bed. She says she had just fallen asleep when the sirens went off.

What happened was PJ forgot to take Winston, our dog, for his walk. Winston barked at him and woke him up, and PJ let him out. But he forgot that we weren't in our old house. Winston had to be walked on a leash to keep him out of the burglar-proof areas. So he set off the alarm.

Mom says she and Dad never got back to sleep. At about five in the morning, Dad got up to get himself a glass of warm milk. But he forgot about the automatic cleaning schedule.

See, most of the rooms in the House of the Future have steel furniture and no carpeting. At certain times, the computer warns you to put away your things and leave the room. Then it spritzes the place with the overhead sprinkler and cleans it up.

Dad was trying to find his way to the kitchen in the dark when the spritzer in the den came on. He was not pleased.



The next day, Dad woke up with a bad cold and in a bad mood. "Mr....Sweeney," said the computer during breakfast, "you're....going...to...be...late...for...work."

"I know that!" he snapped, but he tried to eat his oatmeal faster.

"Dad," said Andrea, laughing. "You're talking to the computer."

"Well, it talks to *me*," grumbled Dad. "PJ, did you put your diorama in the car?"

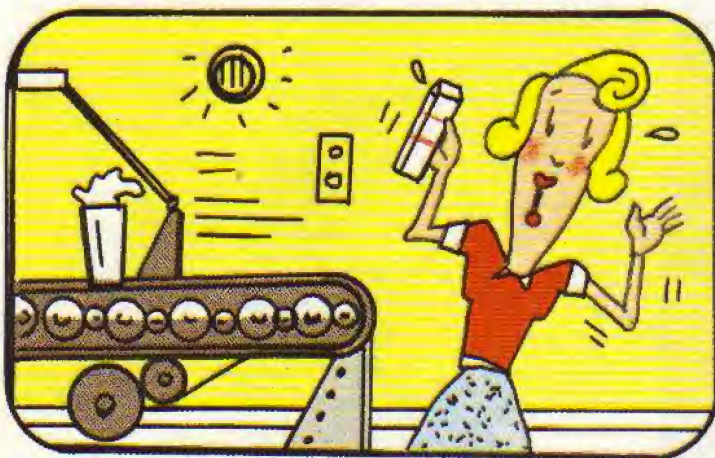
"Not yet."

Dad started yelling: "You're going to forget! You're going to forget!"

See, for weeks, PJ had been working on this diorama of the Pilgrims for his American history class. It was due that day. After Dad yelled at him, he put it in the garage on top of our car so he wouldn't forget it.

The trouble was, the garage of the House of the Future has an automatic car wash. Every Sunday it's supposed to automatically wash, wax, and polish your car. Well, when PJ came back to the kitchen we heard this strange noise coming from the garage. The automatic car wash had gone off at the wrong time. PJ's diorama got washed, waxed, and polished into little bits.

That night, the computer started waking us up at the wrong times. At three o'clock in the morning the computer said to me: "Becky...it's...eight...o'clock. Time...to...get...up." ➔





Mom called Mr. Reesbacher, who sent workers over. But they couldn't find the problem. By Thursday night, the computer was waking us up *every hour*. We were getting pretty mad.

On Friday, Mr. Reesbacher was supposed to show the house to some people who might want to buy it. That day it rained really hard. Dad picked me up after school. The whole trip home, he didn't say a word. When we got back to the house, Mr. Reesbacher's red pickup was already parked out front.

Dad walked up to the front door and said, "Hello, it's Wallace Sweeney." But his voice was kind of hoarse from his cold and the door didn't open.

"It's Wallace Sweeney," he yelled and his voice cracked.

I guess he didn't sound like himself, because the door still didn't budge. It was raining pretty hard, too. Dad had this wild look in his eyes that sort of scared me.

"Let me try," I said, as gently as I could. "Hi," I said into the speaker. "It's Becky." Luckily, the door swung open.

Mr. Reesbacher and the guests, Mom, PJ, and Andrea were in the living room. PJ and Mom were talking to the grownups. Andrea was showing the kids how you could smack the windows and they wouldn't break.

"I don't believe it," muttered Dad. He was looking at the empty box right by the door where the mail was supposed to be. Our mail carrier had been bringing our mail over to the new house. But we hadn't gotten any mail for two days. Dad kept checking the mailbox at the bottom of the hill, but it was always empty.

"I'll be right back," he said to me. And he went out the front door into the rain.

"Where is he going?" Mom whispered. I shrugged to show I didn't know.

Mom introduced me to the Wirtzes, our guests.

There was an awkward silence. Then Mom said, "Well, are you ready for the grand tour?"

They never got to answer. Because right then the computer started yelling over the P.A. system: "INTRUDER! INTRUDER...ON...THE...HILL. PLEASE...COME...TO...KITCHEN...CONTROL!!"

"Everyone in the kitchen!" ordered Mom.

When we got inside, the big screen was lit up and the computer was saying, "CAN...YOU...IDENTIFY...THIS...MAN?"

On the screen was a close-up of a tree.

"We can't see anyone!" I screamed.

"IN...THAT...CASE," said the computer, "I...AM...SEALING...OFF...THE...KITCHEN."

The kitchen doors clicked shut.

"Uh, this a good example of that incredible security system I was talking about..." Mr. Reesbacher told the Wirtzes.

But his voice got drowned out by the sirens that started going off. Giant searchlights started shining back and forth, all over the hill. But all we could see were trees and rain. Winston was barking like crazy. Then Andrea yelled, "It's Daddy!"

Sure enough, there was Dad, on the screen. He had climbed up a tree. He was holding on with one hand. In his other hand he was clutching something white. He was soaking wet from the rain.

"Wallace?" Mom said to the screen, as if he could hear her.

Then PJ started laughing. "It's the mail!" he said. "It must have gotten stuck in the trees on the way up the hill."

On the screen, Dad was reaching for a letter that was stuck in some branches.

"Careful, Wallace!" coached Mom. "Careful!"


Just then, Dad made a lunge for the letter. He got the letter. But he also fell out of the tree.



So that's how Dad broke his leg living in the future.

Needless to say, the Wirtzes didn't buy the house. It's almost November now, and Paradise Homes, Inc. still hasn't sold it. As for us, we moved back to our house the next morning.

The first thing Mom and Dad did was write out a new chore schedule. It used to be that everyone was always late doing their chores. But Mom and Dad say that the first person who's late doing their chores has to go back and live in the future.

Guess what? Everyone's doing their chores on time. 

Special



Section

TUNE IN TO SQUARE ONE TV ON YOUR LOCAL PBS STATION

SQUARE ONE SALUTES THE 1988 ELECTIONS FOR U.S. PRESIDENT



CAN YOU PUT THIS MONEY BACK TOGETHER?

This November, the U.S. will elect a new president. So we decided we'd cash in on all the excitement with this presidential puzzle.

Which president goes with which bill?

HINT: Match the shapes of the cut-out faces with the cut-out shapes in the bills.

Answer on the Did It! page.

CRAZY CASH!

**SQUARE
ONE**

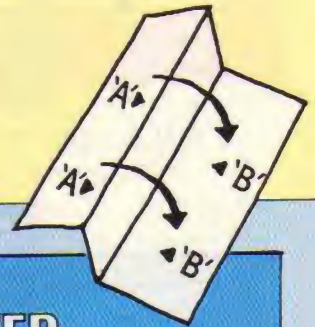
Television

What will really
happen if Phil
E. Buster becomes
president? Fold in
and find out!

At last. It's another...

SQUARE ONE FOLD-IN

Fold in like this so that
'A' meets 'B.'



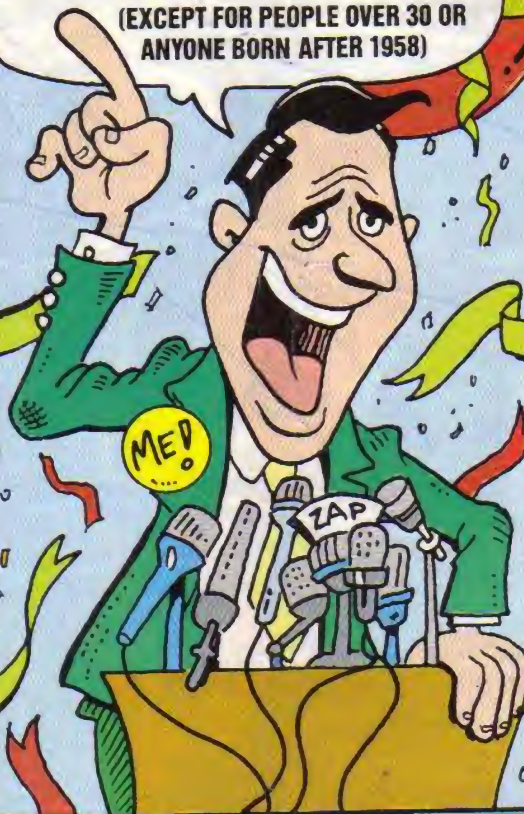
VOTE FOR CANDIDATE PHIL E. BUSTER

A ▶

◀ B

**VOTE FOR ME AND
EVERYONE WILL
BE HAPPY!...**

(EXCEPT FOR PEOPLE OVER 30 OR
ANYONE BORN AFTER 1958)



**HE'S THE CANDIDATE WHO WILL
GIVE US JOBS. HE'LL ALSO GET
RID OF INFLATION AND MAKE EACH
AND EVERY ONE OF US PROUD.**

ILLUSTRATION BY DEAN YEAGLE

A ▶

◀ B

Mathkid! Mathkid! Help Mathman beat out Glitch for mayor.
As you draw your way through the maze, add up the number
of votes on the path. (You can't go over the same path twice!)
There are a number of possible solutions. Glitch got 50 votes.
Can you find a path that gives Mathman 51 votes?

Answer on the Did It! page.

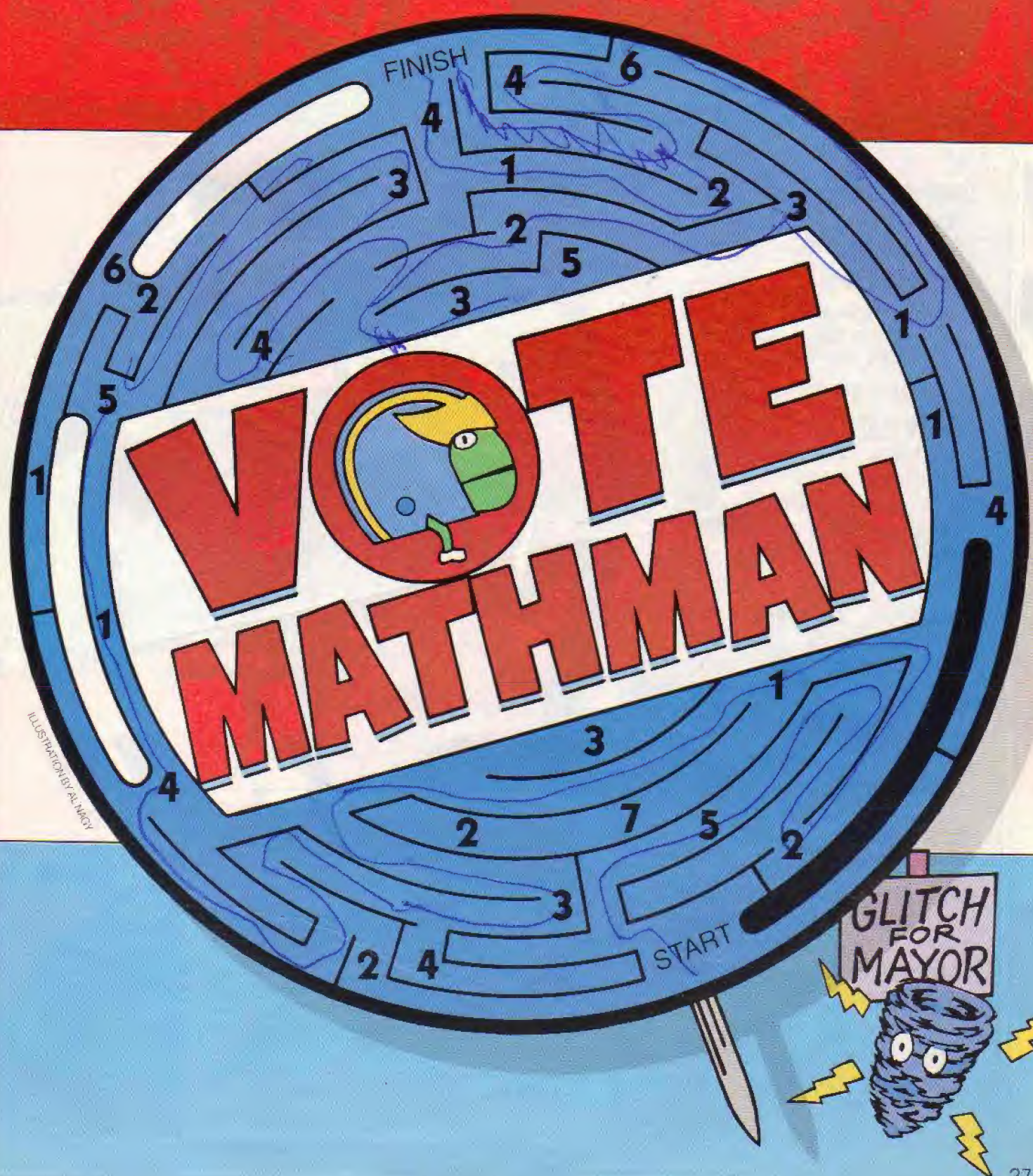


ILLUSTRATION BY AL MOY

VOTE FOR

WHAT YOU'LL NEED:

One die, 23 pennies and two markers (bottlecaps are good).

HOW TO SET UP:

Place the pennies next to the board. Place both markers on the START space. Roll the die to see who goes first. Now you're ready to play!

HOW TO PLAY

Each turn, roll the die and move your marker that many spaces or less. If you want, you can stay put.

If you land on an empty space, place a penny there to show that it's "yours." One player uses heads, the other player uses tails.

When you land on a space that already has one of your pennies on it, nothing happens.

When you land on a space with one of your opponent's pennies, you "Challenge." Roll the die and look up the result on the Challenge Table.

HOW TO WIN

The game ends when there is a penny on every space. All the votes are in! Both players add up all of the votes from their spaces. The player with the most votes wins.

SOME STRATEGY TIPS:

Don't challenge too often at the beginning. Go for the high vote spaces first. If you have a big lead, try to end the game quickly by landing on the last empty spaces.



ME!

AN ELECTION GAME FOR TWO PLAYERS



ILLUSTRATION BY TIM ALLEN

Note: This map is not drawn to scale.

HELP GEORGE AND KATE SOLVE THIS MONTH'S...
STORY: ERIC WEINER
ART: KEITH S. WILSON

MATHNET PUZZLE

THIS STORY IS A FIB, BUT IT'S SHORT.

"I'M KATE MONDAY OF MATHNET. ON FRIDAY I GOT TO THE OFFICE EARLY."



"MY PARTNER, GEORGE FRANKLY, WAS ALREADY THERE."

VOTE FOR WISSE!
HE'S A REAL CARD!

GEORGE, ARE YOU ALRIGHT?



I'LL BE ALRIGHT IF WISSE IS ELECTED PRESIDENT. DO YOU REALIZE HE'S THE ONLY CANDIDATE WHO WANTS TO KEEP THE PRICE OF BASEBALL CARDS LOW?

YES... WELL, I'M AFRAID THAT WON'T BE ENOUGH TO PUT WISSE IN THE WHITE HOUSE.



"GEORGE EXPLAINED TO ME THAT WISSE WASN'T RUNNING FOR PRESIDENT OF THE UNITED STATES. HE WAS RUNNING FOR PRESIDENT OF GEORGE'S CLUB, THE BASEBALL CARD COLLECTORS OF LOS ANGELES..."



AND NOW, MY FELLOW CARD COLLECTORS, THE TIME HAS COME TO ELECT A NEW PRESIDENT. PLACE YOUR BALLOTS IN THIS BOX.

VOTE FOR WISSE!

WE WANT BISSE!

SISSE FOR PREZ!



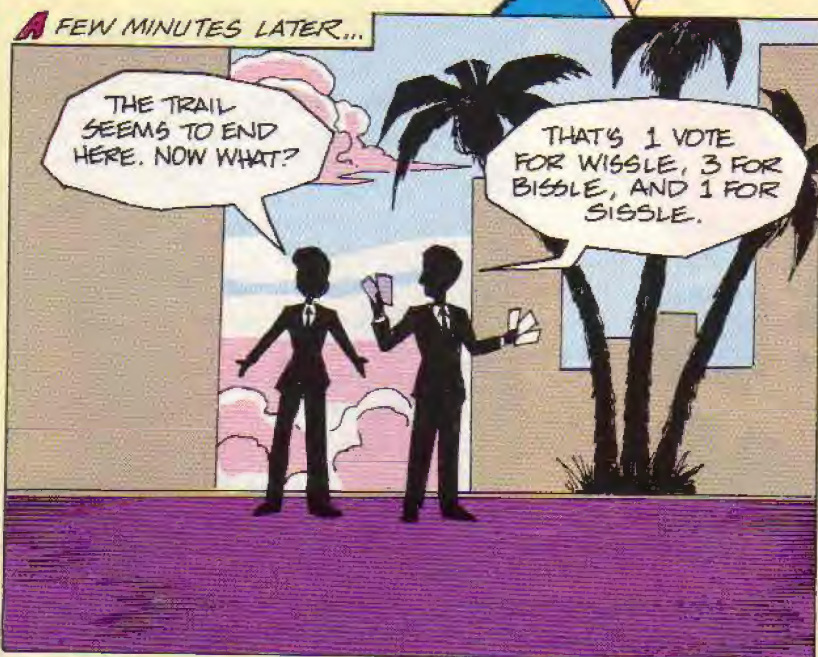
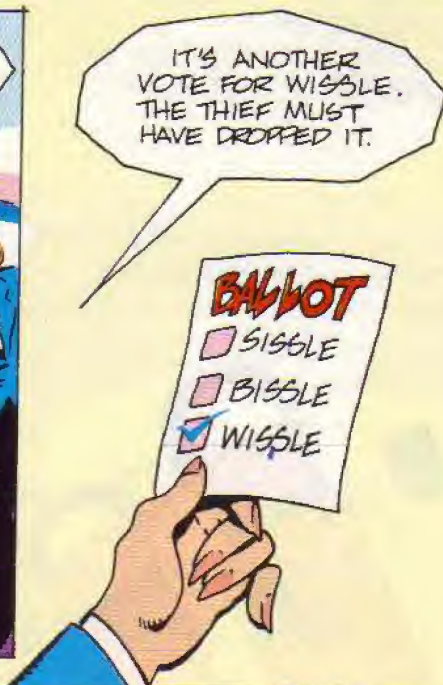
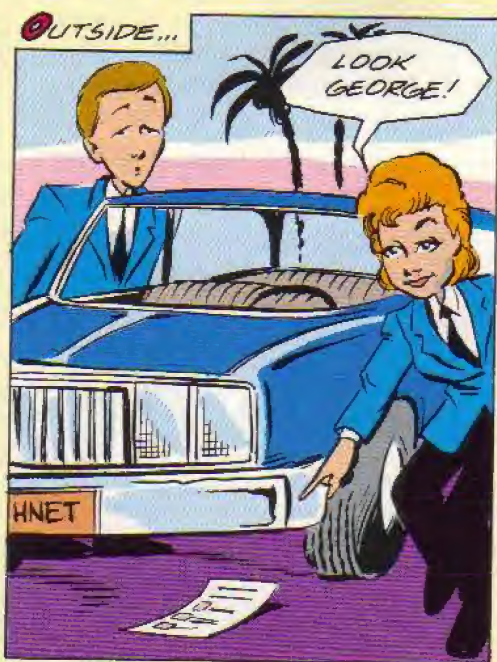
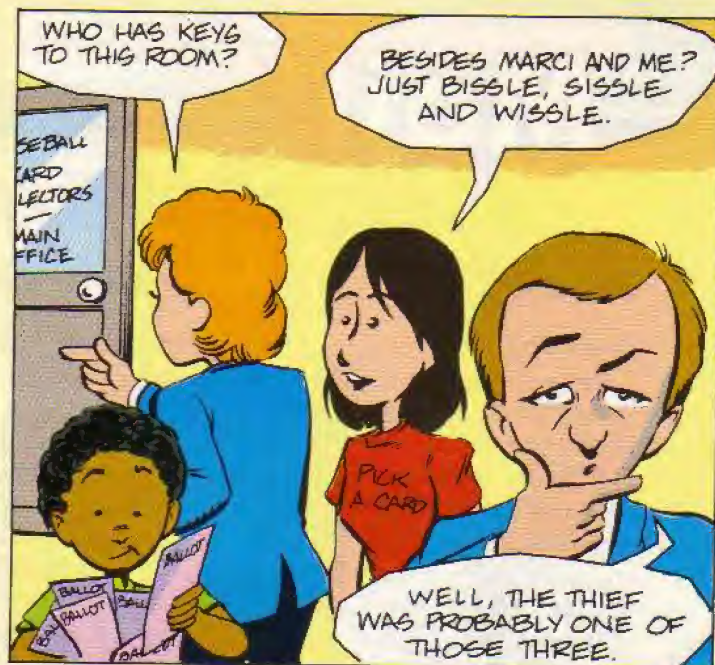
LATER THAT DAY...

DID I SHOW YOU WHO I TRADED FOR THIS MORNING? PEDRO GUERRERO! NOW I HAVE THE WHOLE L.A. DODGER TEAM!

MATHNET! MATHNET! ROBBERY REPORTED AT CARD COLLECTORS' CONVENTION. BALLOT BOX STOLEN!

LET'S ROLL!





Easy Ink

Dear CONTACT,

In the Bloodhound Gang (January/February 1988 issue), it tells how to make invisible ink. But I know an easier way. All you need is some milk or some lemon juice. Dip your paint brush in it and write your message on a piece of paper. When it dries, the paper will look blank. To read your message, heat it up by holding it over a candle.

April Schultz
Bedford, TX

We tested this, April, and it really works! Just be very careful when you heat up your paper. Make sure an adult helps you. If you set your paper on fire, then nobody will be able to read it!

But don't worry, everyone. Next month's CONTACT will be printed with plain old ordinary ink.

Cash Correction

Dear CONTACT,

In your June 1988 issue, you said that you can only spend

Disney Dollars at Disneyland. But I just went to Disneyworld in Orlando, Florida, and you can use Disney Dollars there, too!

Jana Stephenson
Deltona, FL

You're right. When they first came out, Disney Dollars were only for Disneyland. Now you can use them at any Disney theme park. It was our "Goofy"—We mean goof.

(Our thanks to everyone who wrote to us about this.)

CONTEST ROUNDUP

Here are the results of some of our contests and reader polls. Our thanks to the thousands of you

who have flooded our offices with mail. We've enjoyed wading through your entries!

VELCRO CONTEST

Our first-place winner is **Melanie McMillen** from Phoenix, Arizona. She created "Velcro Pockets." They come in different colors and sizes. You can stick them anywhere on your clothes and you can take them off when you don't need them.

Our second-place winner is **Kimberly Ann Neal** from Brooklyn, New York. Her idea was to put Velcro on socks to help keep them in pairs when you're not wearing them.

Our third-place winner is **Erin Wisnewski** from Highland Mills, New York. She wants to put Velcro on books so she can stick them onto the wall and read them while she's taking a bath.



MATH RAP

Jennifer Waite from Clarence, New York, sent us this winning rap called World 100% Full of Math:

Adding, subtracting—
Minus and plus,
Knowing these things
Makes it better for us!

You use math
When you average your grade,
Finding out how much
Tax you paid.

Seconds to hours,
Dollars to cents,
Figuring the interest
On the money you lent!

You can figure it out
By using math.
Study in school
And you're on the right path!

WEIRD WONDER CONTEST

The Barbeque Beast

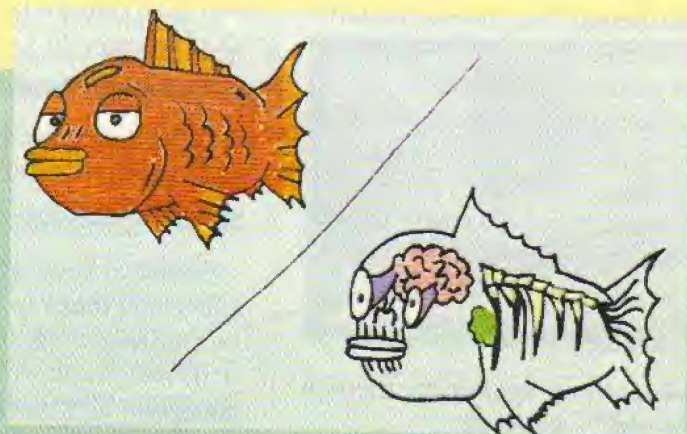
This creature has a gas grill on its stomach so it can bake, fry, roast and flame-broil its prey.

by **Scott Herman** of Valley Forge, Pennsylvania

X-ray Fish

Most of the time, it looks like a regular fish. But when it's in danger, its skin becomes invisible. This scares enemies away.

by **Randy Estiller** of Key West, Florida



FAMILY FUN CONTEST

Here are the winning stories about wacky fun with brothers and sisters:

Rainy Day Fun

One summer we put the sprinkler on and set up two lawn chairs under it. Then we put two umbrellas over us and wrapped ourselves in towels. We pretended that we were stranded on a rainy island. All day long, people came to our lawn to take pictures of us.

By **Kera and Travis Gault** of Duncannon, Pennsylvania

Being "Knotty"

One day, my sister and I had just washed our hair when we found a box full of barrettes. We started putting them on, and there was so much time before dinner that we put *all* of them on. We laughed a whole lot, but when we took them off—our hair was in knots!

By **Rosana Shiu** of Forest Hills, New York

INVENTIONS POLL

We asked CONTACT readers to tell us what they think are the best inventions of all time. These are the top 10:

- | | |
|---------------|-------------|
| 1 Television | 6 Computer |
| 2 Telephone | 7 Robot |
| 3 Car | 8 Clock |
| 4 Electricity | 9 Books |
| 5 Radio | 10 Airplane |

Other favorites were blue jeans, refrigerator, oven, VCR, toilet and gum.

We Want Mail!

Dear Readers,

We love hearing from you. The questions, ideas and complaints we get help us make CONTACT a better magazine. So why not drop us a line? We can't answer every letter, but we do read them all.

Send your mail to:

3-2-1 CONTACT
P.O. Box 40
Vernon, NJ 07462

The Slipped Disk Show

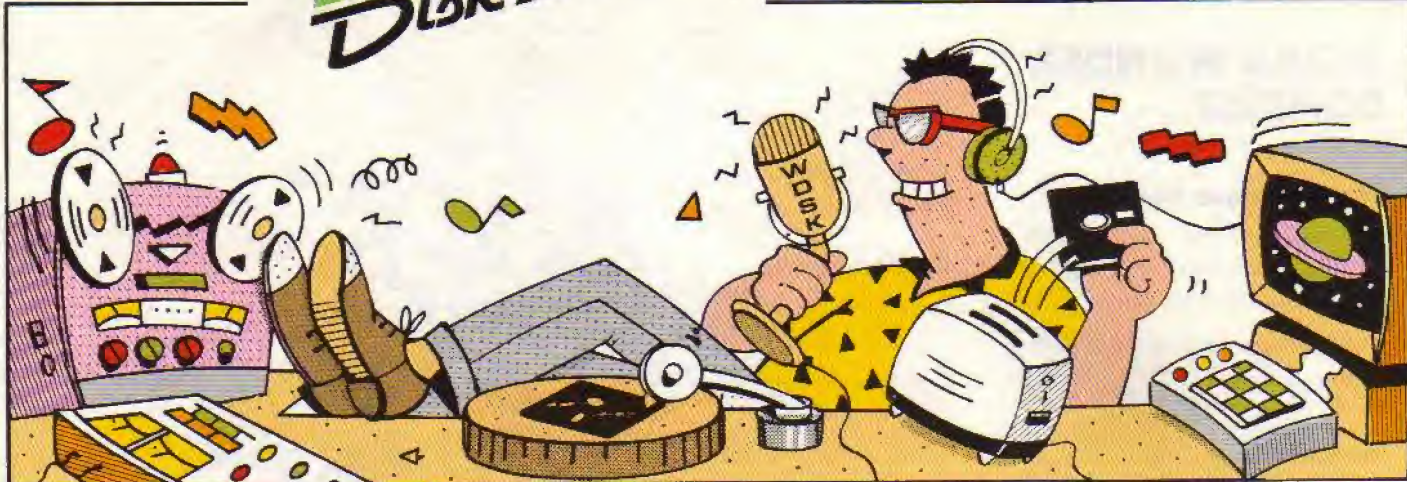


ILLUSTRATION BY CAMERON EAGLE

Bonjour, byte buddies! Slipped Disk here, floppy disk jockey and world-famous computer expert! A lot of people want to know if my dog Floppy hibernates for the winter. The answer is no, he doesn't. He goes to Florida for two weeks. I would have had Floppy answer the question, but he's asleep.

But I'm not asleep, so I can answer this question, from **Erin McGilivray**, 9, of Clark, South Dakota:

"Why does a computer forget the program you type in after it is turned off?"

Well, Erin, I'd like to answer your question, but I forgot the answer! Only kidding! When you type on a computer, the words and numbers are stored in the machine's Random Access Memory (RAM). This memory is made up of electronic circuits on microchips inside the computer.

You can think of RAM as a wall of tens of thousands of tiny lightbulbs. Each bulb is either on or off. You can imagine computer code as a series of on or off lightbulbs. When you type, the computer stores each letter or number by lighting a string of "bulbs" that are either on or off.

Of course, there really aren't little lightbulbs in your computer, but the

basic idea is the same. When you turn off the computer, all the "lightbulbs" go out. Whatever you had stored there is lost, unless you have saved it on a floppy disk, tape or other permanent storage.

So, Erin, that's the answer to your question, and don't ever forget it. And before I forget, let's answer the next question, which comes to us from **Gilbert Pacheevsi**, 10, of Shelter Cove, Indiana. Gilbert asks:

"How many computers are there in the world?"

Gilbert, I always wanted to know how many computers there are in the world, but every time I count them, Floppy makes me lose track.

However, according to the *Consumer Electronics Monthly*, in 1987 there were 9.8 million personal computers sold in the United States alone. The year before, the number was 8.7 million. And of course, that's just personal computers. That doesn't include all the large-scale computers for business and science, or the small computers that are now part of a lot of appliances, cars, engines, toys and video games, to name just a few. Although you probably can't get an exact number, the

answer is in the millions.

Speaking of answers, we have time for a quick answer to this question from **Geneva Louise Morrison**, 12, of Sunnyvale, California.

"Why do they call them floppy disks when they don't flop?"

Geneva, I know you probably expected Floppy to answer that, but he's still sleeping, so I'll have to do it. (If I can think with all that snoring going on.) Floppy disks come in stiff cardboard or plastic cases, so they may not seem very floppy to you. But inside is a soft disk. If you held that disk by itself, it definitely would flop.

And speaking of flops, old Floppy is snoring louder than ever. I'm feeling kind of sleepy myself so I guess I'll take a little nap too. I hope he left room on the rug. But we'll both be awake next month, so if you have computer questions, send them to:

The Slipped Disk Show
3-2-1 CONTACT Magazine
1 Lincoln Plaza,
New York, NY 10023
 Sweet dreams!

Slipped Disk does not hibernate, but he does take a nap every afternoon, right after lunch.

Reviews



Game

Guess Who?

Milton Bradley
\$12.00

To win at this new board game, you have to name the person that your opponent has drawn from a deck of cards. Meanwhile, he's racing to find who your mystery person is. Players take turns asking yes or no questions like "Are you wearing a hat?" and keep track of all this with plastic boards that have pictures of all 24 people. As you get clues, you flip over the people that have been ruled out.

There are two different ways to play Guess Who? In the beginner's game, each player tries to guess the name of one person. This is pretty easy and doesn't take a lot of concentration. In the advanced game, you have to keep track of two people at the same time. To get good at this, you'll really have to use your noodle!

—Russell Ginns

Software

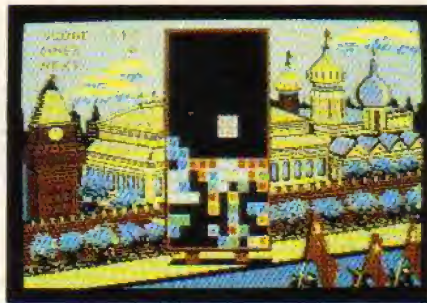
Tetris

for C64, Apple II, Atari ST, Macintosh
and IBM computers
Spectrum Holobyte, \$24.95—\$39.95

This new game is very simple, but you'll want to play it again and

again. You use three computer keys to keep falling blocks from piling up to the top of the screen. Every time you fit the shapes into a complete line, the pile goes down a bit. The longer the game lasts, the faster it gets. You'll have to think very quickly to get through all 10 levels of play.

Tetris makes a big deal out of the fact that it was invented in the Soviet Union. It plays Russian music and in the background are pictures of different parts of the U.S.S.R. But the actual game doesn't have anything to do with Russia. It's a shape-puzzle game that makes you concentrate and think fast, and it's fun! —R.G.



Books

Why Do Cats' Eyes Glow In the Dark

Joanne Settel and
Nancy Baggett
Illustrated by Linda Tunney
Atheneum, MacMillan Publishing Co.,
New York, \$13.95

Calling all animal lovers! Here's a book just for you. It's filled with truly amazing (and little known) animal facts and information. For instance: Can you get a shock from electric fish? How do skunks stand their own smell? You can find the answers to these questions—and plenty more—in *Why Do Cats' Eyes Glow in the Dark?*



Plus, if you're a Factoids "freak" you'll love all the fascinating facts about such neat creatures as vampire bats, cheetahs and penguins.

The information is great for science reports and projects. Or you can just have fun browsing through the book. Then try shocking your friends with all the stuff you've learned about electric fish. But watch out—you might get zapped!

—Antonella Severa

Bet You Can/ Bet You Can't

By Vicki Cobb and Kathy Darling
Avon Books, New York \$2.75 each

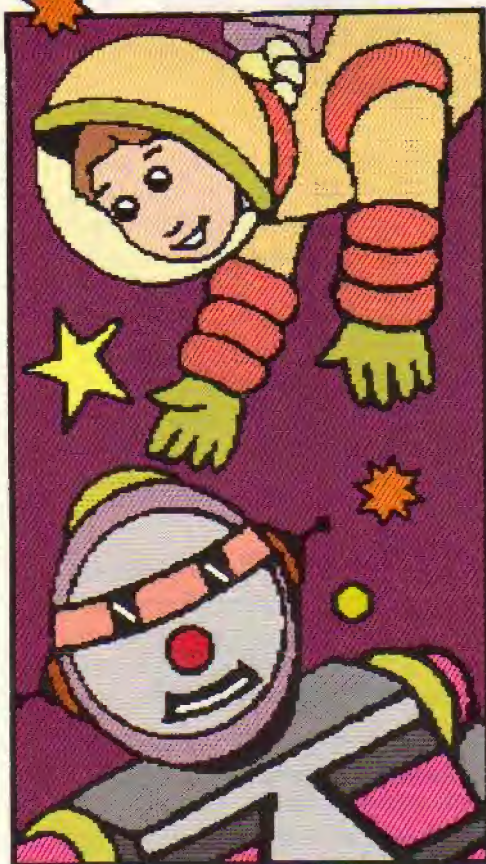
These two books are full of easy science projects that will fool your friends. *Bet You Can* has tricks and stunts that most people will think can't be done. You'll learn how to hold a piece of paper under water without getting it wet and how to get a candle to light itself.

Bet You Can't has feats that sound easy, but are impossible to do. You'll be able to keep your friends from tearing a hole in a piece of tissue paper and stop them from getting up out of a chair.

If you'd like to learn how to hang a spoon on the end of your nose, then this is the book for you! —R.G.



Basic Training



Robot Space Search

As an Interspace Detective (second class) your biggest wish is to get a promotion to Interspace Detective, first class. But in order to get your new badge, you have to prove yourself by cracking the case of the robot robbers!

Someone (or something) has stolen four top-secret robots from the Cleveland Mega-tech Cosmic Laboratories. Your job is to find as many robots as you can and bring them back to Earth.

Luckily, you can use your trusty planet-hopping vehicle to visit any of the nine planets in the solar system while searching for the robots. (We've even printed a rough map of the solar system for you to use.) Just follow the instructions of the computer to get from planet to planet.

There's one catch—you only have 100 units of fuel. Traveling to distant planets can burn up a lot. And recovering robots can take anywhere from one to 15 units. You have to get back to Earth to make your report, so keep your eye on the fuel gauge.

If you do get back and make your report, you get 50 points for every robot you've recovered. You can also score points for naming the location of robots, even if you didn't actually pick them up.

The program is written for Apple II computers. Following it are instructions for adapting it to other computers. Thanks to **John George, Jr.**, 13, of Altoona, Pennsylvania, for giving us the idea for this program.

Commodore 64/128

Change all HOME statements to
PRINT CHR\$(147)

Add or replace these lines:

```
5   POKE 53281,1:POKE 53280,1
960  FU=FU-1
961  C=C+1:IF C>8 THEN C=1
962  POKE 53281,C:POKE 53280,C
1011 POKE 53281,1:POKE 53280,1
```

IDM

Change all HOME statements to
CLS

Add or replace these lines:

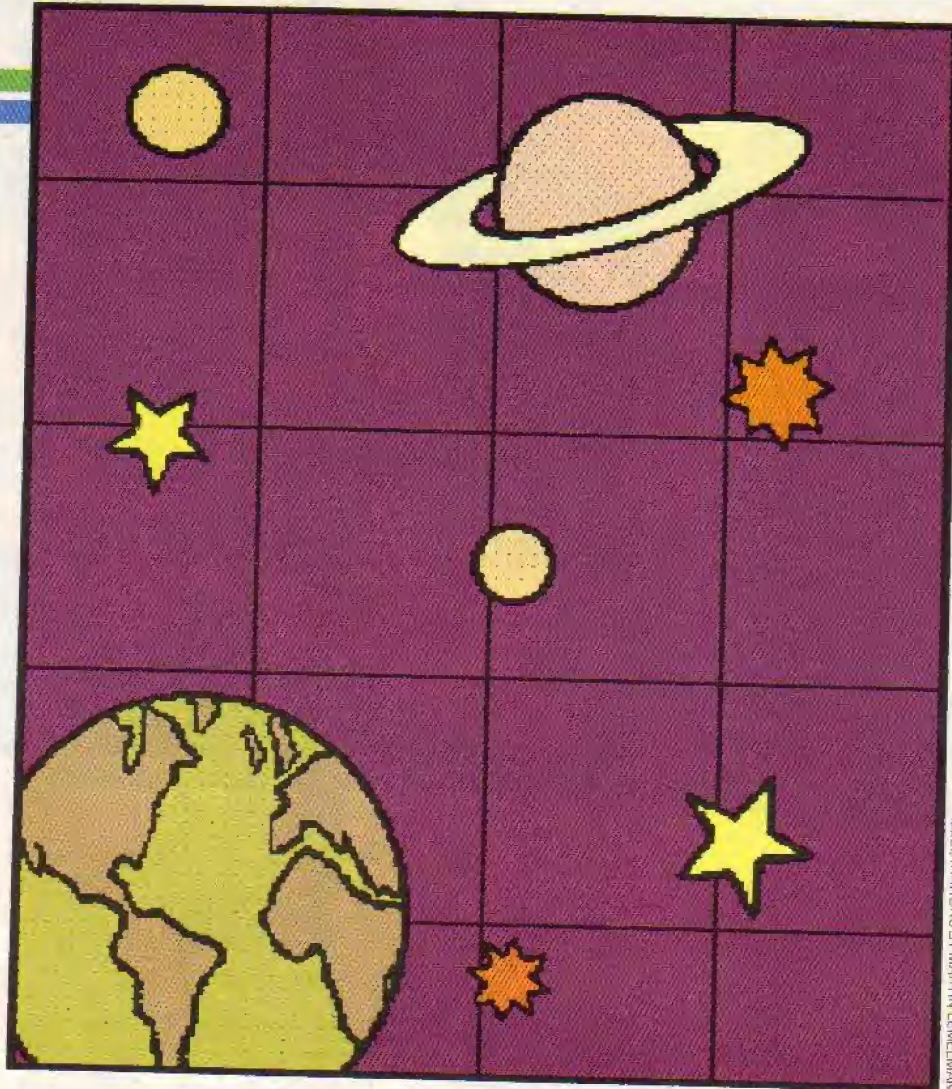
```
5   SOUND ON
960  FU=FU-1
965  SOUND 700,8
```

END

Apple II

```
10  HOME
20  DIM P$(10),MB$(9),D(9),AD(9),
    T$(9)
```

```
30  FU = 100:CL = 3:R = 0:S = 0
40  FOR X = 1 TO 9
50  READ A$:P$(X) = A$
60  READ A$:D(X) = A
70  READ A$:MB$(X) = A$
80  READ A$:AD(X) = A
90  T$(X) = "":NEXT X
100 FOR X = 1 TO 4
110 T = INT (RND (1) * 9) + 1
120 IF T = 3 THEN 110
130 IF T$(T) <> "" THEN 110
140 T$(T) = "T":NEXT X
150 REM GAME LOOP
160 IF FU < 1 THEN 650
170 GOSUB 870
180 IF T$(CL) = "T" THEN 200
190 PRINT "NO ROBOT
    DETECTED":GOTO 310
200 PRINT:PRINT "SHIP'S
    SENSORS REPORT"
210 PRINT "STOLEN ROBOT IN
    ORBIT"
220 PRINT "DO YOU WISH TO
    RETRIEVE IT? Y/N"
230 INPUT A$
240 IF A$ <> "Y" THEN 310
250 F = INT (RND (1) * 15) + 1
260 FU = FU - 1:GOSUB 950
270 PRINT "ROBOT
    SUCCESSFULLY
    RECOVERED.":PRINT
280 T$(CL) = "":R = R + 1:S = S
    + 50
290 FOR DE = 1 TO 1500:NEXT
    DE
300 GOTO 150
310 IF CL <> 3 THEN 340
320 PRINT "DO YOU WISH TO
    MAKE A REPORT? Y/N?"
330 INPUT A$:IF A$ = "Y" THEN
    670
340 PRINT "TYPE DESTINATION
    PLANET"
350 INPUT DP$
360 FOR N = 1 TO 10
370 IF DP$ = P$(N) THEN 390
380 NEXT N
390 IF N <> CL THEN 420
400 PRINT "DESTINATION IS
    CURRENT LOCATION—RE-
    ENTER"
410 GOTO 310
420 IF N < 10 THEN 450
430 PRINT "NO SUCH PLANET—
    RE-ENTER"
440 GOTO 310
450 HOME
460 PRINT "DESTINATION
    SELECTED.":P$(N)
```

ILLUSTRATIONS BY MARTIN LITKEMAN

```

470 IF NB$(N) = "M" THEN M$ =
    " MILLION": GOTO 500
480 M$ = " BILLION"
490 PRINT
500 PRINT "DISTANCE FROM
    SUN:"
510 PRINT D(N); M$;
    " KILOMETERS"
520 PRINT
530 G = ABS (AD(CL) - AD(N))
540 PRINT "DISTANCE FROM "
    ;P$(CL)
550 PRINT G:
    " ASTRONOMICAL UNITS"
560 PRINT "FUEL REMAINNG:"
    ;FU
570 PRINT: PRINT "ENTER
    COMMAND, THEN PRESS
    RETURN:"
580 PRINT "S TO START
    ENGINE."
590 PRINT "N TO SELECT NEW
    DESTINATION."
600 INPUT A$
610 IF A$ <> "S" THEN 170
620 F = INT (G): IF F < 1 THEN F
    = 1
630 GOSUB 950

```

```

640 CL = N: GOTO 150
650 HOME: PRINT "OUT OF
    FUEL"
660 GOTO 340
670 HOME
680 PRINT "COMPUTER
    REPORTS:"
690 PRINT "YOU HAVE
    RECOVERED "; R;
    " ROBOTS"
700 IF R >= 4 THEN 840
710 R = 4 - R FOR Y = 1 TO R
720 PRINT "ENTER LOCATIONS
    OF REMAINING ROBOTS."
730 INPUT "PLANET:";A$
740 FOR X = 1 TO 10
750 IF A$ = P$(X) THEN 790
760 NEXT X
770 IF X < 10 THEN 790
780 PRINT "NO SUCH PLANET":
    GOTO 830
790 IF T$(X) = "T" THEN 810
800 PRINT "NO ROBOT AT THAT
    LOCATION": GOTO 830
810 S = S + 25: T$(X) = ""
820 PRINT "ROBOT RECORDED
    AT ";A$
830 NEXT Y

```

```

840 PRINT "YOUR SCORE IS: ";S
850 PRINT "GAME OVER"
860 END
870 HOME
880 PRINT "NAVIGATION
    COMPUTER REPORT: ";
    PRINT
890 PRINT "YOU ARE IN ORBIT
    ABOVE ";P$(CL)
900 IF MB$(CL) = "M" THEN M$
    = " MILLION": GOTO 920
910 M$ = " BILLION"
920 PRINT D(CL); M$;
    " KILOMETERS FROM THE
    SUN"
930 PRINT
940 RETURN
950 FOR X = 1 TO F: HOME
960 FU = FU - 1: PRINT CHR$(
    7)
970 PRINT "SHIP'S ENGINE
    ACTIVATED"
980 PRINT "REMAINING FUEL: "
    ; FU
990 IF FU < 1 THEN X = F
1000 FOR DE = 1 TO 300: NEXT DE
1010 NEXT X
1020 FOR DE = 1 TO 600: NEXT DE
1030 RETURN
1040 DATA MERCURY,57.9,M,39
1050 DATA VENUS,108.2,M,72
1060 DATA EARTH,149.6,M,1
1070 DATA MARS,227.9,M,1.52
1080 DATA JUPITER,778.3,M,5.2
1090 DATA SATURN,1,427,B,9.54
1100 DATA URANUS,2,869,B,19.18
1110 DATA NEPTUNE,4,496,B,
    30.06
1120 DATA PLUTO,5.9,B,39.44

```

Send Us Your Programs

If you've written a program you'd like us to print, send it in. Include a note telling us your name, address, age, T-shirt size and type of computer. If we like it, we'll print it and send you \$25.

All programs must be your own original work. We cannot return programs. Please do not send disks.

Send your program to:
Basic Training
3-2-1 CONTACT Magazine
1 Lincoln Plaza
New York, NY 10023

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What do you eat?



We're hungry to find out about your eating habits. We'll print what you say in a future issue of CONTACT. So please fill in our food poll and mail it to: Food Poll

3-2-1 Contact Magazine
One Lincoln Plaza
New York, NY 10023

First, tell us about yourself:

Name _____

Address _____

I am a Boy _____ Girl _____ Age _____ Grade _____

Telephone Number (optional) _____

Breakfast

1) Do you make your own breakfast?

Yes _____ No _____

2) What do you eat? Cereal _____ Eggs _____

Roll, toast or muffin _____

Other (please list) _____

Lunch

1) Do you choose what you'll eat for lunch at school?

Yes _____ No _____

2) Do you buy lunch at school? Yes _____ No _____

3) What do you think of your school lunches?

Yuck _____ Okay _____ Great _____

4) Do you bring lunch from home? Yes _____ No _____

5) How do you carry it? Lunch box _____ Bag _____

6) Do you make your own lunch?

Yes _____ No _____

7) What do you drink at lunch?

Juice _____ Milk _____ Soda _____

Flavored milk _____ Other _____

8) What is your favorite lunch? _____

Snack

1) Do you usually have a snack after school?

Yes _____ No _____

2) If you have a snack, how do you get it?

Parent gets it _____ You fix it yourself at home _____

You buy it at a store _____

3) What's your favorite snack? _____

Dinner

1) Who decides what you eat for dinner?

Parent _____ You _____ Other _____

2) What's your favorite dinner? _____

Other

1) How often do you cook? Never _____

Once in a while _____ At least once a week _____

Every day _____

2) Do you go food shopping? With an adult _____

Alone _____ Not at all _____

3) How often do you eat out? Never _____

Once in a while _____ At least once a week _____

Every day _____

4) Which meals do you usually eat with your family on school days? (You can check more than one.)

Breakfast _____ Lunch _____ Dinner _____

None _____

5) What's most important to you when you choose foods? (Check one.)

If it's good for you _____ If it's tasty _____

If it's easy to get _____

6) Have you ever been on a diet to lose weight?

Yes _____ No _____

7) Do you think you are: too skinny? _____

too fat? _____ just right? _____

8) Which of these foods do you think keep you healthy? (Check as many as you like.)

Vegetables _____ Milk _____ Fish _____

Fried Foods _____ Candy _____ Soda Pop _____

Diet Drinks _____ Water _____ Pizza _____

9) Which of these foods do you eat regularly?

Vegetables _____ Milk _____ Fish _____

Fried Foods _____ Candy _____ Soda Pop _____

Diet Drinks _____ Water _____ Pizza _____

10) Which of these foods do you like?

Vegetables _____ Milk _____ Fish _____

Fried Foods _____ Candy _____ Soda Pop _____

Diet Drinks _____ Water _____ Pizza _____

Thanks for filling out this poll!

—Did It!—

Crazy Cash

\$1—Washington
\$5—Lincoln
\$10—Hamilton
\$20—Jackson
\$50—Grant

Vote Mathman



Mathnet Puzzle

George found 5 of the 27 missing votes, so there are only 22 left. Here's how the votes stand so far: Wissle has 88 votes, Bissle has 64, and Sissle has 65. If all remaining 22 votes go to Bissle, Bissle will have 86. If all 22 go to Sissle, he will have 87. No matter what, Wissle wins!

Extra!

Body Talk, Part Two

Answer: It would be a foot.

THANKS!

We'd like to thank the students and teachers of these schools for their help in putting together this issue: Stillman School, Tenafly, NJ; P.S. 60, Yonkers, NY; Hubert School, Secaucus, NJ; P.S. 59, New York, NY; Haycox School, Oxnard, CA; Backus Elementary School, Backus, MN; Cave Springs School, Cave Springs, GA.

Next Month!

Here are some of the holiday items you can look forward to in the December 1988 issue of 3-2-1 CONTACT:

Dogs to the Rescue

A dog is a person's best friend—especially when it's a rescue dog saving the lives of people trapped in an avalanche. Find out the whole story in this heroic feature.

Amazing Jigsaw Puzzles

Meet some young people who are champs at putting together jigsaw puzzles. While you're at it, you'll find out some of the science and math behind those puzzles.

Square One Holiday Section

Celebrate the holidays with puzzles and games, and of course, a Mathnet mystery comic.

Plus the Bloodhound Gang, Factoids, Any Questions, Basic Training, and Much, Much More!

HOLIDAY FUN

**Gifts that keep
on giving for the
entire year...**

**from
Children's
Television
Workshop**



Sesame Street Magazine (for ages 2-6)—Big Bird and all his friends bring poems, stories, games and other learning activities in ten terrific issues a year...Plus with every issue of Sesame Street Magazine there's a 24-page plus Parents' Guide as a Bonus for You! It's loaded with helpful articles on child development and gives you ideas on how to increase your child's participation with each issue. 10 issues (1 yr.) for just \$12.97!

Kid City Magazine

(Formerly the Electric Company Magazine) Perfect for Sesame Street Graduates! It's amusing, playful, absorbing, and educational for beginning and young readers ages 6-10. Give ten colorful issues filled with stories, puzzles, games, cut-outs, jokes...and sunny smiles, for just \$12.97!

3-2-1 Contact—Entertaining and informative adventures in science and technology for 8 to 14 year olds. Each of CONTACT's ten big issues is packed with puzzles, projects, experiments and colorful feature stories. PLUS computer programming, software and book reviews, and challenging Square One TV math puzzles and games. A fun, involving way to learn and yours to give for just \$13.97!

**If the order card is missing, please
send your order, along with a check
made out to the desired magazine, to:**
Children's Television Workshop
One Lincoln Plaza
New York, NY 10023

"I COULDN'T STOP
LAUGHING!"

MARTY CASEY, AGE 10.

"THE MONKEY IS
SO FUNNY!"

SHELLY BILYEW, AGE 12.

"IT'S RAD!"

ERNE WOOD, AGE 12

"BEST MOVIE IN
THE WORLD!"

GARY BRUCKER, JR., AGE 8.

Going BANANAS

GO TOTALLY BANANAS WITH DOM DeLUISE AND AN OUT-
RAGEOUS TALKING CHIMP, ON THE WORLD'S WACKIEST SAFARI!



ON VIDEOCASSETTE.

